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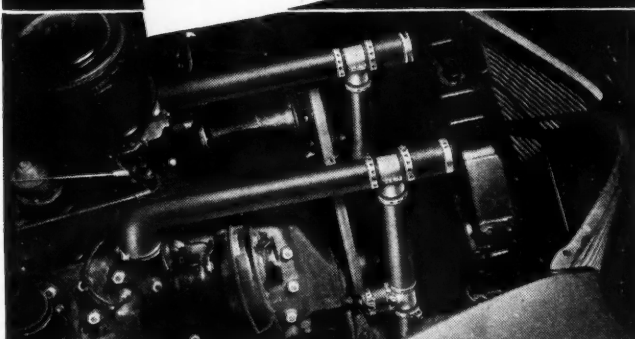
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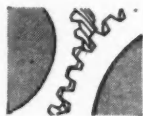
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TEXACO



Trucks now have a lane of their own on hilly sections of U. S.-Tennessee Route 31W near Nashville. To effectively identify the extra lane for slow-moving vehicles the concrete mix was colored with red iron oxide

EARS



TO THE GROUND

Tank Truck Topic

Failure to get any details does not daunt this fearless department, which proclaims that there is in the experimental stage an automatic fire extinguisher which, if it comes through, will be as revolutionary in gasoline trucking as the automatic sprinkler was in commercial buildings.

Movie Method

Any day now you will be able to run a vehicle in front of a screen and clamp a projector on a wheel and tell all about the

alignment of that wheel. Adjustable guide lines on the screen must register with the lines projected by the light source. The operator supplies his own subtitles.

Wheel Work

Mechanics who have cricks in their backs from lifting and pushing dual wheels onto axles may now stand erect and cheer. A departmental agent has seen a jack on casters which operates more easily than a passenger car jack and which will lay the wheels right in place as easily as you would raise the top on a perambulator.

Power Package

One manufacturer who has been building a power ram with attendant jigs and fixtures to make it useful is now concerning himself with a midget model of this equipment and at the same time a smaller torque wrench.

Filter Fact

Those who like to keep up with oil filters will have to be on the lookout for a new filter which will soon be announced—features as yet unknown.

Exhaust Examination

This department always tries to keep up with higher education. Its latest efforts in this direction have been rewarded with the news that a college professor has invented a new smoke meter for diesels that will tell when an engine is threatening to smoke even before the eye can detect it. He does not intend to patent the device, which can be made in a machine shop and he will give specifications to whoever wants them.

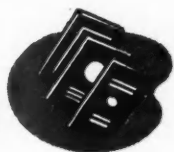
Lift Letter

Our man in charge of jacks, who hates to get down on his knees on a muddy road to locate the jack, reports that several frame jacks for passenger cars have made their appearance. On the new passenger cars that have no running boards the jacks work swell and he does not have to get his pants dirty to get the jack into action.

Conversion Component

For those who have had some trouble with universal joints when adding auxiliary transmissions to light trucks, a new type of joint is to be offered.

FREE BOOKS



... a special selection made by the editors ... to get your copy, just check the letter on the post card between pages 118 and 119 which corresponds with the item you desire and mail to Commercial Car Journal, Philadelphia.

Shaler Tune-Up Manual

A new 64-page pocket-sized booklet dealing with lubrication, tune-up and general care of gasoline and diesel engines is offered by The Shaler Co., Waupun, Wis., makers of Karbort and Rislone. Stressing tune-up technique using the manufacturer's products, the booklet con-

tains much valuable information including a question and answer section that bites into many vital lubrication problems. Check "A" on the post card.

Valvoline Analysis Plan

A booklet giving full details of the company's new oil analysis service for fleet users has been prepared by the Valvoline Oil Co. Described more fully elsewhere in this issue, the service is extended without charge to any fleet with a buying potential of 10 drums per year. This booklet highly recommended to larger fleets. Check "B" on the post card.

Dodge Truck Catalog

A 44-page Dodge truck catalog gives full details of the 1941 line of Dodge Job-Rated trucks. Printed in four-colors the catalog covers the full range from ½-ton to the largest diesel. Check "C" on the post card.

Dodge Diesel Details

In a separate catalog, Dodge gives more extensive details of its diesel truck line including much factual information of the operation of diesel units in many lines of business. Check "D" on the post card.

"Permalux" Decal Data

This is a special for Coca-Cola bottlers. The Permalux Co., Chicago, has a brand new catalog of the company's extensive line of "Kolorfilm Truck Decalcomania" in standard Coca-Cola designs for panel trucks, bottle trucks and salesmen's cars. Check "E" on the post card.

Savings & Safety

"Savings & Safety in Truck Operation" is the title of a new booklet from Sangamo Electric Co., Springfield, Ill., that gives full details of the company's new Tachograph truck movement recorder (described elsewhere in this issue). Check "F" on the post card.



EDITORIAL COMMENT BY GEORGE T. HOOK, EDITOR

The Threat to Limit the Field of Truck Operation

ONE of the most important events ever to confront the entire truck industry is scheduled for 1941.

In the Transportation Act of 1940 Congress authorized the appointment by the President of a three-man board of investigation and research, one of whose duties would be to investigate the relative economy and fitness for transportation service of carriers by highway, railroad and water, with a view of determining the service for which each type of carrier is especially fitted.

Although some eminent regulatory authorities, whose motives are above suspicion, have toyed with it, the idea is primarily railroad-inspired. It is

supported mainly by the railroads themselves, by representatives of the big railroad bond-holders—banks, insurance companies and the like, who are imbued with the hope that the board will come up with a decision which will protect the railroads from their competitors and improve their financial condition.

Specifically, the hope of the railroads and their allies is that each form of transportation will be assigned the sphere of operation in which its advantages could be made most effective, and that each within its sphere would be protected against competition, or, as the railroads subtly phrase it, "from the chaotic and destructive conditions which now

apparently overlap all fields."

Everyone knows that the railroads consider themselves superior in the long-haul field. And clearly they hope that this sphere of operation will be assigned to them, free of competition from motor trucks, at least. But how long is the long-haul to which the railroads lay claim? Obviously they will do their utmost to convince the board that it should be pretty short, so that they could take over much of the long hauling now being performed by motor trucks.

On the other hand, will they be willing to concede to motor trucks the short-haul field in its entirety? And how short is a short-haul? Won't the railroads try to make it so short that it's practically a local operation?

These are not easily answered questions. That is true also of the fundamental question of what factors should be considered in determining the economy of one form of transportation over another. Obviously, cost of operation is only one factor.

The conducting of an investigation into the relative economy and fitness of the various forms of transportation service has not been opposed by the truck industry. Every impartial study that has been made of matters involving truck and railroad competition has resulted in victory for motor trucks. The industry doubtless is confident that given an impartial board this time, the result will be a decision that the operating spheres of transportation services cannot be rigidly defined.

We do not know what the board will decide, but we do know that if it limits the economic sphere of operation of motor trucks it will do so only because it chooses to ignore the

CCJ QUIZ



By
**ROBERT
F. BAHL**

Here you are—the first quiz of the new year. See if you can start things off right by scoring a 100 points. You score 10 for every correct answer.

(Correct Answers on Page 86)

1.

If you are searching for a "Green Diamond," your best hunting ground would be:

- In South Africa.
- On the General Motors Production Line.
- In an International Truck.

2.

Of particular significance is a recent bulletin issued by the National Safety Council, which states:

a. "During the past 12 years, truck accidents have decreased 29 per cent while passenger car accidents have increased 18 per cent."

b. "For the twelfth consecutive year, the number of truck accidents has shown a decided increase."

c. "In 1940, for the first time in twelve years, truck accidents showed a decrease under the previous year."

3.

Maybe it would help reduce the accident rate if every driver remembered that:

- It takes 21 amperes to blow a horn and only 2 to light a stop light.
- It takes 200 amperes to blow a horn and only 21 for a stop light.
- It takes 2 amperes to blow a horn

extremely important fact that the truck is not a static instrument of transportation, that its efficiency and, therefore, economical sphere of operation, is constantly being improved and that, as certainly as the sun will rise tomorrow, the truck of the future will be a better, a cheaper-to-operate, a wider-economical-radius vehicle than the truck of today. In bringing this about, a large segment of American business and of gainfully employed citizens has been, is and will be constantly employed.

Here are the road builders—constantly building better highways; highways that are safer, that speed traffic, that eliminate grades, that last longer and are cheaper to maintain; highways, in other words, that permit vehicles to operate over them more economically.

Here is the petroleum industry—constantly providing motor vehicles with better fuels that cost less and that can be converted into more power, and with better lubricants that reflect themselves in lower operating costs.

Here is the tire industry—constantly improving the weight-carrying capacity and the durability of truck tires.

Here is the metals industry—constantly developing stronger, lighter-weight, more durable materials for use in bodies and in the parts that make up a truck chassis.

Here are manufacturers of parts—constantly improving the quality of their products so that they are less subject to wear and failure and thus contribute to lower cost of operation.

Here are the manufacturers of engines—constantly improving the power-to-weight ratio and the operat-

ing efficiency of truck powerplants.

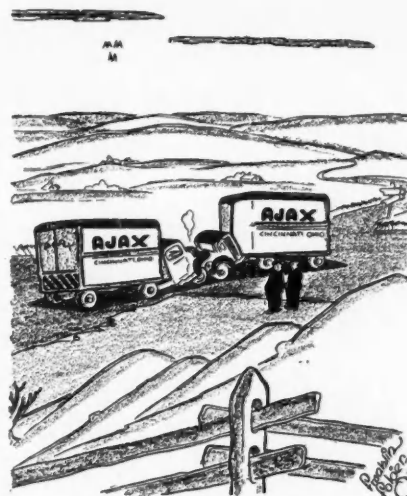
Here are the manufacturers of trailers—constantly effecting savings in dead weight that can be converted into the same loads for longer distances or larger loads for the same distances at no increase in cost, or into the same loads for the same distances at lower costs.

Here are the builders of shop equipment and service tools—constantly developing devices to cut down maintenance costs and to reduce the out-of-service time of trucks needing repairs.

Here are the builders of motor trucks—constantly taking advantage of the improvements in materials, in fuels, in design technique and in production machinery to build ever better trucks, trucks that operate more lower prices.

Here are the operators of motor trucks—constantly improving in their knowledge of truck operation, many of them just beginning to realize the savings to be derived from safety campaigns, from careful cost accounting, from the selection of equipment that fits the job, from preventive maintenance routine, from efficient repair-shop practices, from greater attention to load factors, from better routing; operators who are constantly effecting reductions in their controllable costs, but who still have much to accomplish in this direction because they are a long way from scientific selection, operation and maintenance of motor trucks.

Here are all these American business enterprises—each group competitive in the extreme and thriving on the competition—all striving to effect product improvements to make
(TURN TO PAGE 90, PLEASE)



"Small world—ain't it?"



Here's the first of 260 Reo dump trucks soon to be delivered to the Army at Camp Holabird. Reo will also furnish 40 more with cargo bodies



Willys-Overland is latest company to receive a war department order for light reconnaissance cars. This one has Willys engine and, like Ford and Bantam versions, four-wheel-drive

and a negligible amount of current for the stop light.

4.

If you were to saw a crankshaft in half, lengthwise, you would find:

- A porous structure, like a sponge.
- Grain lines, such as those in a tree.
- A crystalline structure that had the appearance of a myriad of snowflakes.

5.

For every horsepower of work produced by a truck engine, how many horsepower must be carried away by the cooling system?

- $\frac{1}{2}$ horsepower.
- 1 horsepower.
- $1\frac{1}{2}$ horsepower.

6.

If you were visiting in Milford, Mich., you would be interested in seeing:

- The 1268 acre Proving Grounds of General Motors.
- The birthplace of Henry Ford.
- The new Reo plant, now under construction.

7.

If it were possible to substitute pure nitroglycerine for gasoline in the gas tank, we would get:

- 3 miles per gallon.
- 300 miles per gallon.
- 300,000 miles epr gallon.

8.

Your truck probably has a 6-volt storage

system. Yet, it takes about 10,000 volts at your spark plug. How in the world is the voltage stepped up from 6 to 10,000?

- By the magneto.
- By the coil.
- By the distributor.

9.

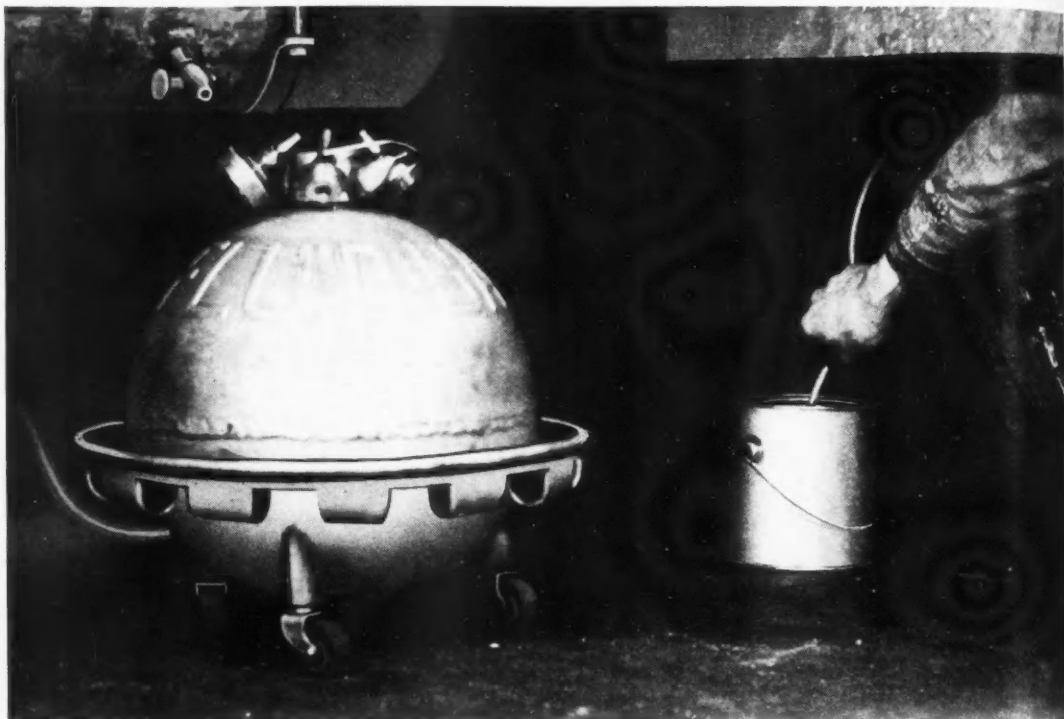
The production of anti-knock gasoline was stymied until means were found of obtaining one of these elements in sufficient quantities:

- Chlorine.
- Bromine.
- Fluorine.

10.

The finish of the quiz . . . from start to finish, how long did it take to put the varnish finish on a truck back in 1922?

- 2 hours.
- 2 days.
- 22 days.



As in the case of virtually every shop function, good equipment makes the job of bleeding . . .

BRAKE FLUID FACTS



BRAKE fluid has become one of the most widely used of all automotive chemicals. Its importance from a functional and safety standpoint cannot be overemphasized. Still fleet operators know relatively little about brake fluid, and **COMMERCIAL CAR JOURNAL** has been unable to find a fleet that has developed any well-thought-out plan for buying brake fluid.

Consulting 185 fleet operators on their experience with brake fluid, **COMMERCIAL CAR JOURNAL** found that the chief complaint is in rubber swelling, with gumming next, then corrosion, evaporation and freezing. When tabulated the brake fluid troubles experienced by fleet operators make the following box score. It should be pointed out that no complaint was able to muster a full roll call of the 185 fleets who contributed.

Complaints in Order of Importance	1st	2nd	3rd	4th	5th
Rubber swelling...	71	66	16	7	1
Gumming.....	46	63	48	4	2
Evaporation.....	36	9	25	16	14
Corrosion of metal.	31	22	33	28	3
Freezing.....	1	3	8	14	39

In order to provide fleet readers with some information on how to avoid these and other complaints, **COMMERCIAL CAR JOURNAL** went to the manufacturers of brake fluid with four questions, which, if answered, would provide the fleet operator with the working information necessary to consider brake fluid intelligently. The questions were:

1. What characteristics should fleet operators look for when purchasing brake fluid for motor trucks and why?

2. Is there any way that a fleet operator can make a qualitative

check of a brake fluid to make certain that it embodies the desirable characteristics, or must he depend upon the reputation of the manufacturer and trust that actual service experience will justify that faith?

3. What are the most common service troubles involving brake fluids in trucks and what advice can you give fleet operators to avoid or curtail them?

4. What specific truck service troubles, commonly laid to brake fluid, are to be attributed to the negligence, carelessness or other fault of fleet operators?

The collective response to the first question, "What characteristics should fleet operators look for when purchasing brake fluid for motor trucks and why?" indicates that there are 10 qualities necessary for a perfect brake fluid. They are:

1. It must have some lubricating



... and filling brake lines easier



FOR FLEETS

value. Since the brake system is closed and no other lubricant can be introduced into it, the fluid must be sufficiently oily and penetrating so that it will lubricate and permit smoother operation of pistons, cups and all enclosed operating parts of the brake system.

2. It must be permanent. The fluid must not evaporate, leak, deteriorate or in any way change or escape from the system. Otherwise continual replacement would be necessary.

3. It must not deteriorate or attack rubber. Since many important parts of the brake system are made of rubber and are bathed in the fluid, the fluid must be compatible with rubber.

4. It must not corrode or otherwise attack any of the metals or alloys that are present in the brake system. There are several different alloys

used in a brake system and corrosion or pitting of any of them would possibly result in brake failure.

5. It must be physically stable. The fluid must not expand or contract beyond narrow limits, must not thicken or become solid or gaseous. It must remain physically the same under the wide range of temperatures and operating conditions it will encounter in service. If it becomes gaseous under high temperature it may cause vapor

Ten characteristics every brake fluid should have, together with comments by experts on quality tests and most common troubles

lock, which gives a rubbery pedal or complete loss of brake pedal and improper transmission of pedal pressure. If it thickens in cold temperatures the brake action will be sluggish. If it turns to a solid in any quantities, the brakes will not operate at all.

6. It must be chemically stable. The fluid must not break down or change into some other material or

(TURN TO PAGE 111, PLEASE)

FIGURING THE LOAD FACTOR

An expert defines the meaning of Load Factor . . . explains its effect on cost per ton-mile . . . tells how it should be determined . . . and evaluates such influencing factors as supply and demand, proper dispatching and the sound education of shippers

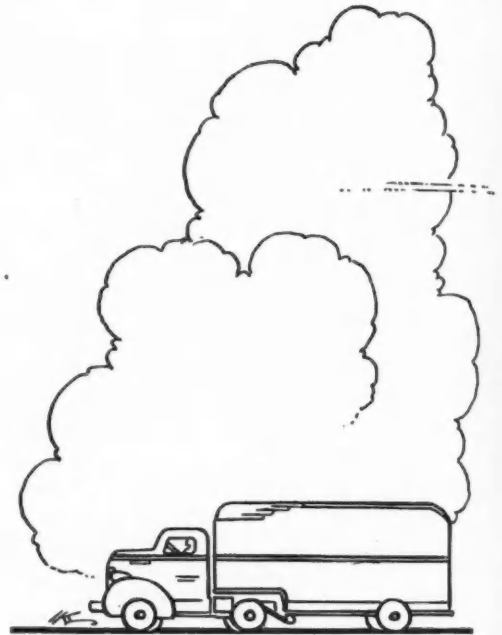
by FRED H. CHESNUT

EDITOR'S NOTE—Mr. Chesnut is well qualified to discuss this subject. For five years he was senior engineer in the Transportation Dept. of the California Railroad Commission where he devoted all of his time to the study of truck transportation costs. Now he is Transportation Engineer of Diamond Freight Lines, Inc., Modesto, Calif., a company which grosses \$400,000 annually in common and contract carrier operations. His past experience also includes 14 years with the White Co. as transportation engineer on the Pacific Coast and three years superintending the 325 trucks of Langendorf Bakeries, San Francisco.



LOAD factor as it applies to motor truck transportation is the ratio of the tons moved to the tons which could have been moved had the truck been loaded to its full carrying ca-

capacity. For example, a 20-ton truck makes a round trip between A and B. From A to B it carries 20 tons and from B to A it moves empty. The load factor is 50 per cent. However on another day a so-called "back haul" of

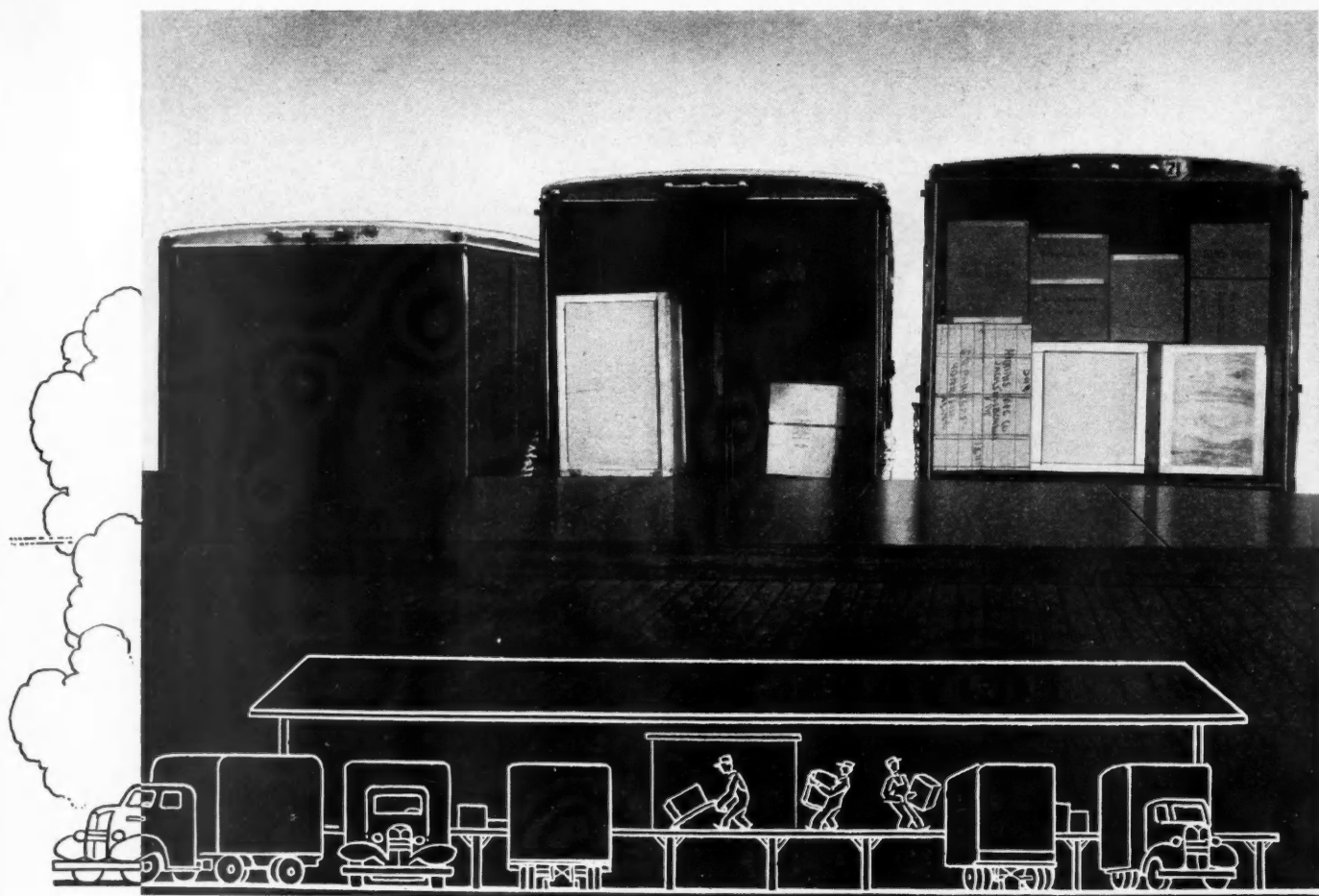


10 tons is obtained in addition to the 20-ton movement from A to B. The load factor becomes 75 per cent. These examples illustrate Load Factor in its simplest form.

The important influence of Load Factor upon the cost per ton can best be disclosed by the very simple table which follows. The table is calculated on the assumption that the cost of making a round trip between A and B with a 20-ton truck is \$40.00. The cost per ton for the movement in *either direction* varies in proportion to the tons moved *per round trip*, thus:

Load Factor	Tons Moved Per Round Trip	Cost Per Ton
50%	20	\$2.00
60%	24	1.66
70%	28	1.42
80%	32	1.25
90%	36	1.11
100%	40	1.00

If we assume that the going rate for the transportation in question is \$1.42 per ton it is evident that when the Load Factor is 60 per cent a loss of \$.24 per ton or 16 per cent will be experienced; and when the Load



Factor is 90 per cent a profit of \$.31 per ton or 24 per cent will be the result. Profit and loss are very sensitive to the stimulus of Load Factor.

It must therefore be evident that the truck carrier should keep himself accurately informed with respect to the volume of his Load Factor and its trend. Up-to-date statistics on Load Factor broken down by operating divisions as routes are of valuable assistance in the direction of sales effort and dispatching.

Two methods may be used to determine Load Factor, both of which will produce accurate results if applied to the working conditions for which they are designed.

The first and simplest working condition is where the operation is carried on between fixed termini and over a regular route—for example between A and B. A 20-ton truck will serve to illustrate the method of calculation. Assume that the record of tonnage moved during several days is as follows:

Monday	A to B	20 tons
	B to A	5 "
Tuesday	A to B	15 "
	B to A	12 "
Wednesday	A to B	10 "
	B to A	20 "
Total.....		82 "

A total of 82 tons was moved in three round trips. Had the truck been loaded to capacity during all trips 120 tons would have been moved. The load factor for the three days was 68.3 per cent ($82/120 \times 100$).

However the calculation of Load Factor becomes more complex if we consider, for example, that the truck makes irregular trips to various points over routes which may vary from time to time. In the first illustration the element of distance cancels out as it is the same each round trip. Where the routes are irregular we must bring the element of truck miles into the calculation. To illustrate, assume again the use of a 20-ton truck and that it runs on a circuitous route from A to A through B, C and D and on the various legs of the journey carries various loads

or no load at all. The table which follows sets forth in cols. (1), (2) and (3) the statistics of the operation and in cols. (4) and (5) the calculation leading to the Load Factors shown in col. (6).

Route	Distance Miles	Load Tons	Net Ton Miles	Gross Ton Miles	Load Factor
(1)	(2)	(3)	(4)	(5)	(6)
A to B	200	20	4000	4000	100.0%
B to C	240	12	2880	4800	60.0%
C to D	60	0	0	1200	0
D to A	20	9	180	400	45.0%
Totals and Weighted Average			7060	10400	67.8%

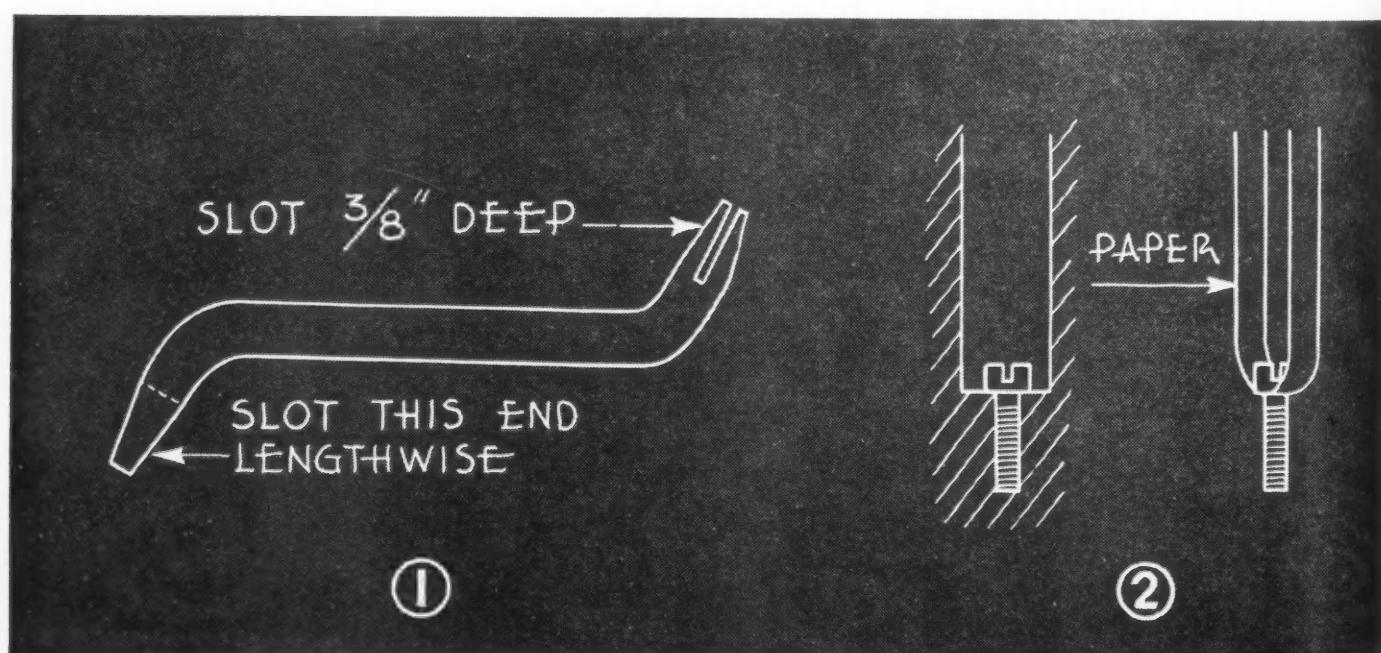
The net ton miles shown in col. (4) are the products of the values in cols. (2) and (3) and the gross ton miles shown in col. (5) are the products of the values in col. (2) and the carrying capacity of the truck, viz. 20 tons. The Load Factor in col. (6) is found by multiplying the values in col. (4) by 100 and dividing by the values in col. (5). It will be observed that the Load Factor of 67.8 per cent is the *weighted* Load Factor for the round trip. Obviously this method may be readily expanded to take in

(TURN TO PAGE 88, PLEASE)

CAN YOU USE



That's what Commercial Car Journal pays for each shop hint accepted for publication on these pages. Simply send in the idea which you believe to be original. Don't worry about style. Acceptance is based on the idea. CCJ will edit it for publication





SHOP HINTS

FROM FLEET SHOPS



1. Voltage Regulator Tool

By John L. Schoettle
CCC Central Repair Shop,
Lake City, Fla.

Needing something better than a screw driver or pair of pliers for setting voltage regulators and cutout relays we made the tool illustrated from the center section of a Chevrolet push rod. Actually we have made several varying the length and depth of the bend. The rod is bent without heating and the slots are cut with two hacksaw blades side by side. The tool is plenty strong enough for bending stop springs or spring anchors and the slots are wide enough for any type regulator. A slight taper beginning $\frac{1}{2}$ in. from the ends will make the tool handier in cramped space.

2. Screw Holder

By Henry Roland
Cleveland, Ohio

I have saved much time and temper when it was necessary to start a screw in a deep recess by holding it in position with paper. Just take a piece of newspaper and tear a strip narrow enough to go into the recess. Make it twice as long as the recess is deep. Fold the strip in half and push the screw through the fold. Now hold the screw in position by holding the paper in one hand. The other hand is free to manipulate the screw driver.

3. Oil Pan Locator

By Harry Edge
Philadelphia, Pa.

To locate oil pans and hold them in place while installing the bolts, cut the head from two bolts. After re-

moving the heads slot the bolts for a screw driver. Then slot the bolt as shown in the illustration. With these two locaters which can be installed before the pan is put in place, it is possible to shove the pan in place and have it stay there without holding while you go through the tedious process of getting bolts started. The studs can then be removed with a crew driver.

4. Waste Can

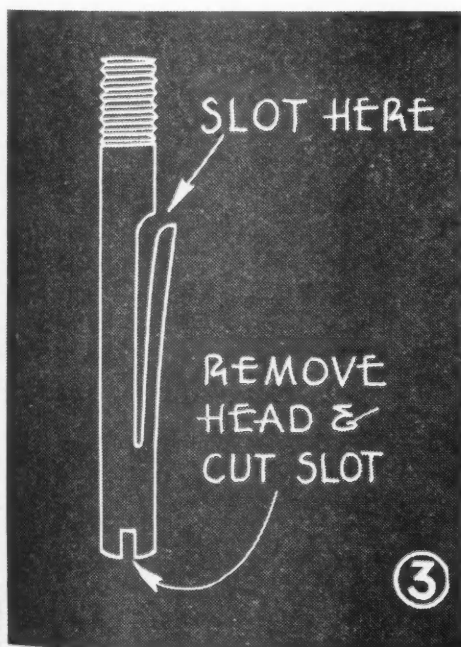
By Preston R. Coleman
Rainey Wood Coke Co., Swedeland, Pa.

Everybody uses the small drums that come as containers of gear oil for fireproof waste cans but I believe we have improved on the basic idea. We took a chisel and cut out half of the top and fastened the flap with two small hinges at the diameter side. Then with about 2 ft. of $\frac{1}{8}$ in. by $\frac{3}{4}$ in. strap iron we made a handle for lifting the flap and another for picking up the can. The whole top comes off for emptying.

Air Cock

By Robert Liles
Cincinnati, Ohio

We converted some of our shop equipment from hydraulic operation to air operation and it became necessary for us to have an air admission, cut-off and exhaust valve. We simply took a good grade $\frac{1}{4}$ in. air cock and drilled the housing at right angles to the line and drilled the cock inside at right angles to the normal air passage. Now by a 90 deg. turn it is possible to control the air operated tools.





WIN WITH WATER



**A way to make ordinary water do a
job as important as any shop tool**



PROBABLY every fleet operator who reads this is proud of his preventive maintenance system. In addition to inspections based upon time or mile-

age he checks very carefully the amount of gasoline and oil which his vehicles consume each day of operation. If the gasoline consumption is too high certain steps are indicated

regardless of mileage from the last inspection or to the next one. The same is true of oil consumption. If the oil consumption jumps it is not so much the cost of the oil that worries the operator as the mechanical condition which has caused the increased consumption or loss. If there is a sharp loss of air in a tire it calls for the tire being dismounted and inspected, not because of the cost of air but because of the mechanical condition involved and the road failure or expensive repair which is sure to result.

While all of this care is going into recording gasoline, oil and air the intake of another truck necessity is disregarded entirely. Actually many fleets have spent money for towers and hose and faucet arrangements to make it as easy as possible to disregard the amount of water that is put into the cooling system when the truck comes in from its day's work. Why, if gasoline, oil and air are measures of a truck's condition, should the water intake be omitted as an indication of a truck's mechanical condition?

Lest we masquerade as thinking up this idea all by ourselves, let us pause at this point to say that Bus Transportation discovered the idea in Howard M. Smith, superintendent of equipment, Connecticut Railway & Lighting Co., Bridgeport, Conn. Mr. Smith has applied the idea, with very good results, to a 300-unit bus fleet.

There are only three ways that water can escape from a cooling system. They are by overflow, due to the expansion of water when heated or turbulence created by the water pump; by evaporation or by leaks. Quite obviously if a truck is operated at the same engine temperature day after day the amount of water loss will remain constant. Evaporation is governed by atmospheric temperature and the amount of water exposed at the filler. This loss will be negligible except when the truck stands idle for days. Any kind of leak is dangerous and should be remedied. An excessive loss of water would indicate that the engine is running too hot, thus causing a water loss, or that there is a leak in the cooling system that rates immediate attention. It is even possible that in a case where the cooling system is mechanically tight, an unusually small water loss would dis-

(TURN TO PAGE 72, PLEASE)



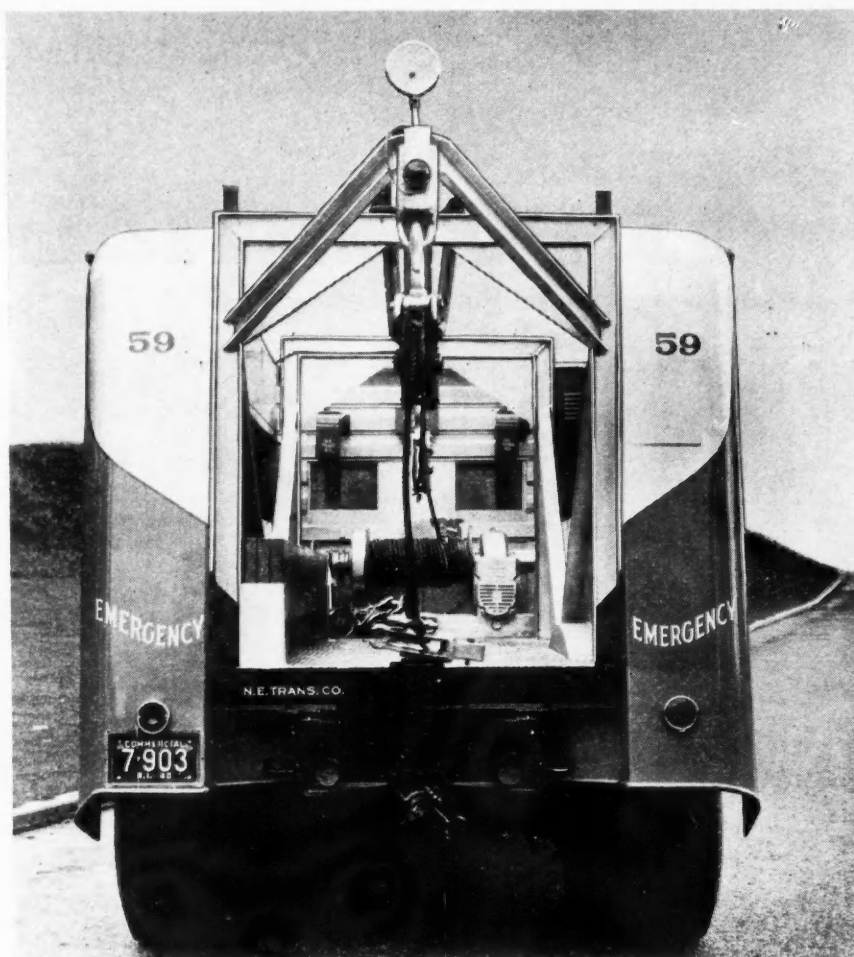
EDITOR'S NOTE

To D. V. Gearwar, Superintendent of Maintenance for New England Transportation Co., Providence, R. I., goes credit for the accompanying photographs and description of his company's new multi-purpose emergency truck which most certainly gets an A-1 rating for both design and completeness of its equipment.

All fleetmen are invited to contribute to this new series of actually-in-service body designs which merit special attention.



THE body illustrated on this page was designed by D. V. Gearwar, Superintendent of Maintenance, New England Transportation Co., Providence, R. I., and was built by the Providence Body Co. It is a multi-purpose body in that it must carry the men and supply the tools and equipment necessary to meet any emergency that the company's several hundred coaches, trucks and tractor-trailer combinations may encounter. Within two minutes of the time an



BODY OF THE MONTH



Fleet Service truck designed and equipped to handle any emergency

emergency call is received, the truck must be out the door and on its way with a full complement of men and materials.

In building the body the correct

weight distribution for plowing snow was a must. The tipping point had to be correct for hoisting a fully loaded trailer dropped on its nose

(TURN TO PAGE 71, PLEASE)

15 POTENTIAL PAINTING FUMBLES

... and how they can be prevented
or "recovered" by understanding
and following proper technique

1. Shrinking and Splitting of Primer Surfacers

Cause: (a) improper cleaning of surface; (b) feather edging not carried back 2 to 4 in.; (c) piling on in heavy coats; (d) insufficient drying time between coats; (e) fanning air to force drying; (f) surface too cold when primer surfacer was applied. Cure: suggested by cause.

2. Compounding too Early

Cause: lower left section of illustration was rubbed with compound too soon, causing compound to become imbedded in soft lacquer. Cure: allow more time before compounding.

3. Over Spray—Dry Spray

Cause: working to center line from either side of car, first side sprayed is oversprayed. Cure: Spray oversprayed section with a wet mist coat made by adding several parts of thinner to color left in cup or straight thinner.

4. Orange Peel

Cause: (a) improper atomization (b) sprayed improperly. Cure: make sure compressor supplies 9 or 10 cu.

ft. of air per minute with gun pressure of 50 to 60 lb. and hold gun at right angles to work 6 to 10 in. from surface, using full arm strokes with no wrist action.

5. Rust Under Film

Cause: presence of rust on surface at time of refinishing. Cure: sand all rust spots and clean with preparation.

6. Finger Prints

Cause: Touching metal after it is clean and ready for spray. Cure: wear cotton gloves.

7. Runs or Sags

Cause: application of too much material. Cure: follow manufacturer's instructions for regulating gun and do not hold too close to work.

8. Pinholing in Lacquer

Cause: moisture in lines or insufficient atomization. Cure: clean and drain spray equipment and spray in normal coats with proper pressure.

9. Poor Adhesion

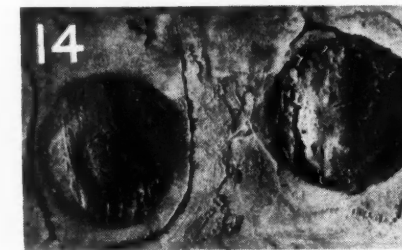
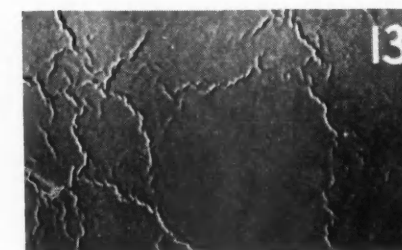
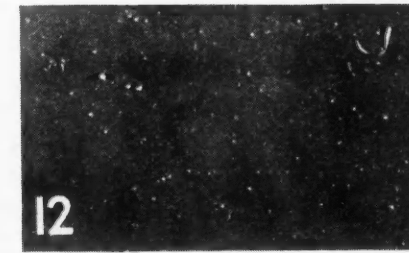
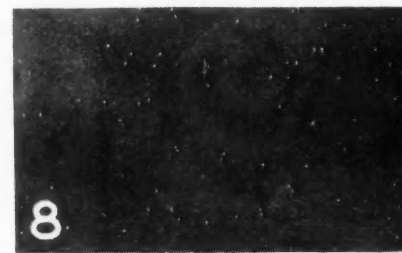
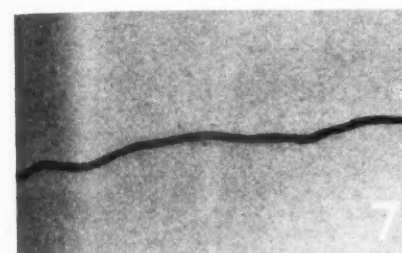
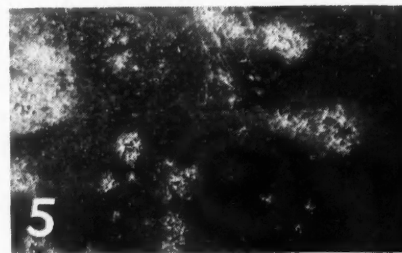
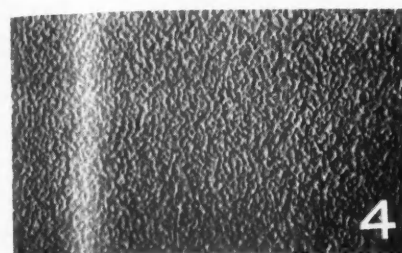
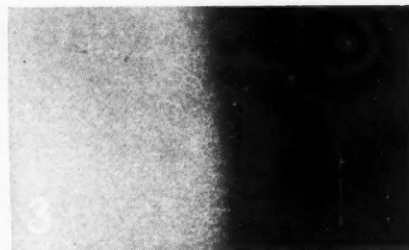
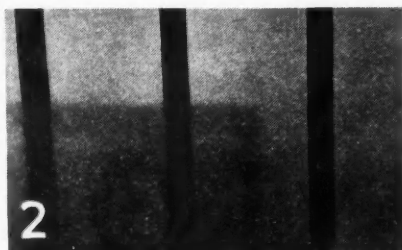
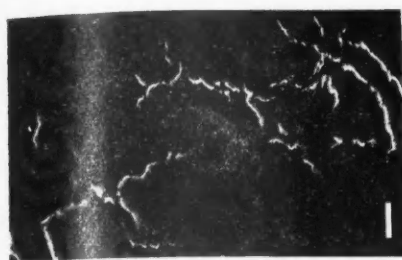
Cause: application of improper undercoats or lack of thorough prep-



aration of surface. Cure: suggested by the cause.

10. Chalking of Lacquer

Cause: left side of illustration shows chalking from weather and exposure. Cure: use mist coat mixed with a slower-drying thinner or apply wax.



Photos and data courtesy of E. I. duPont de Nemours & Co.

11. Checking and Cracking

Cause: top coats applied before undercoats have dried or application of heavy coats which prevents uniform drying. Cure: suggested by cause.

12. Rough Dirty Surface

Cause: spraying on dusty surface.

Cure: wipe surface with a tack rag immediately before spraying.

13. Lifting

Cause: applying finish to surface from which all wax had not been removed. Cure: clean surface with preparation and allow enough time between coats.

14. Shrinking and Splitting of Putty

Cause: putty applied too heavily. Cure: apply putty in several light coats.

15. Wet Spots

Cause: finish applied over wax. Cure: clean surface with preparation to remove wax, grease and polish.



THE purpose and effect of merit and demerit plans as used in reducing motor vehicle accident frequency and claim expense must be chiefly psychological. Neither alone nor together should they comprise a fleet safety program. But they are definitely necessary if the maximum reduction of accident frequency is to be obtained.

Since vehicle safety depends more upon the mental and emotional habits and capacity of the driver than upon any other combination of factors, accident prevention activities must be designed to exercise a remote control of the driver. A control which will restrain him or impel him when he is away from direct supervision, when he is one in a hundred drivers moving at great speed through a city or along a rural highway. A control which will urge him when he is not compelled to obey sound driving rules. Merit and demerit plans should be designed to effect such remote control and to make it a daily, continuing process. It must reduce mental letdowns for in the operation of a vehicle such letdowns mean more than inefficiency or the breaking of a safety record—they may mean death, injury, destruction of property, loss of revenue, suspended service.

Merit and demerit plans must be economical. They must be self-sustaining and must produce economies in fleet operation. They must not reduce the operating efficiency of a driver or a company.

While merit and demerit plans may be centered about the driver as an individual, they should produce favorable group reaction. An operator can scarcely afford, by rewarding or penalizing one driver, to develop resentment in a group. The plans must be beyond question as to fairness and must not be altered for expediency alone.

It is necessary to give the terms "merit", "demerit", "award", and "penalty" both a sense of tangible and the intangible so that our plans will include all effective coercive or conforming activities—a letter, a jewelled award pin, a monetary bonus, a training interview or discharge.



Mr. Smith (standing, right)

PENALTIES

I. DEMERIT PLANS

It is well to inaugurate and administer Demerit Plans with full emphasis upon necessity as to their economy and productivity, and upon fairness as to their effect upon labor relations. In some cases they must have the approval of organized labor, and as they affect the driver's earnings must conform to certain state and federal laws.

Since demerit plans invariably produce adverse reactions from your personnel, they should be factual, fair and consistent. Many basically sound demerit plans have failed because they were not impartially or judicially administered. They were possibly the cause of much of the criticism by organized labor.

A. Discharge

Discharge is neither as necessary

as most employers contend, nor as unnecessary as employees or their representatives insist. While discharge eliminates the accident frequency and expense of the discharged employee, the employer even with the best of the current driver selection and training program, must pay the cost of labor turnover, the possible risk of a new employee's greater unfamiliarity with routes, customers, company policies, and a disturbed personnel. Employers still have much to learn about the reactions of a group of employees to a policy of discharge too drastic and too active. Discharge should be limited to certain classifications of accidents, such as those caused by or involving the use of alcohol or narcotics by the driver, criminal or wilful negligence if reasonably established, physical or mental incapacity



pins a button on driver's lapel in recognition of an outstanding safety record. Other driver holds a special certificate

vs. REWARDS



and incompetency after adequate instruction.

Unless you are well informed concerning the reactions of your driver personnel to a system of drastic discipline, submission may be mistakenly identified as loyalty or cooperation. When drivers are affiliated with organized labor, arbitration must often be resorted to. One employer who insisted upon the discharge of drivers who exceeded the company's speed regulation spent \$1500 in fees for an arbitrator and stenographer to find after he had lost his case, that the drivers had obtained other employment and wouldn't return. He certainly didn't increase the respect of his drivers for his safety and personnel policies.

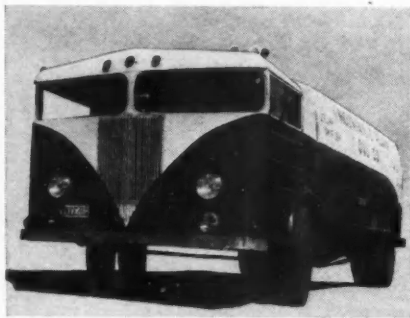
Of one large fleet operator an insurance company's inspection man-

(TURN TO PAGE 52, PLEASE)

A very thorough analysis of the various methods fleets may use to increase driver cooperation in making safety programs work

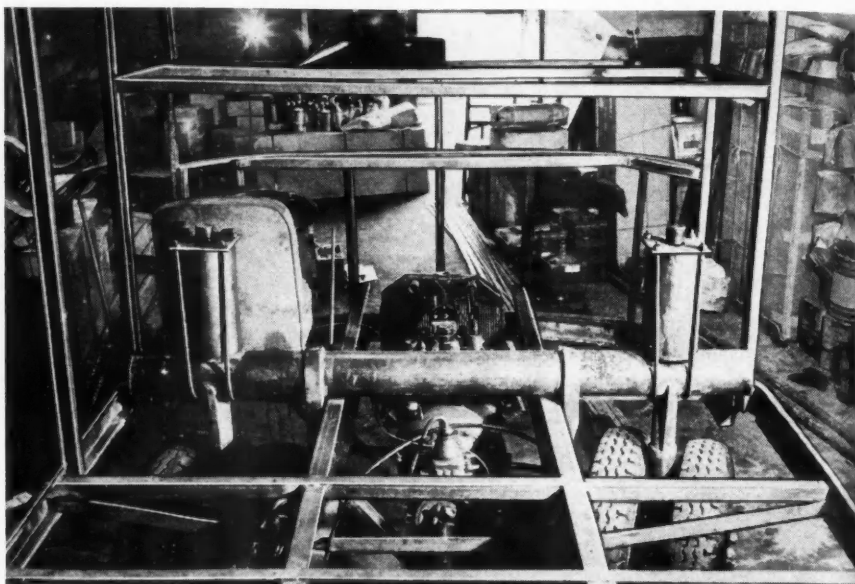
by W. ROBERT SMITH

Insurance and Personnel Director
Pennsylvania Truck Lines, Inc., Philadelphia



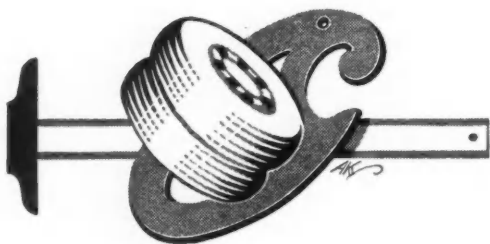
Above: This dual-wheel tanker makes two 1000-mile round trips every week between McPherson, Kan. and Denver

Right: Basic construction details include the high tubular front axle, huge king pins which give caster-like support to dual front wheels and integrally-mounted coil springs



DESIGN FOR DUALS

**Denver fleetman builds own truck
featuring dual-front-wheel design
carrying 20,000 lb. on front axle**



A NOVEL front-end construction for trucks which permits the use of dual front wheels has been developed by E. V. Garnett of the Garnett Truck & Coach Co.,

Denver, Col. Mr. Garnett is also associated with the Colorado Rapid Transit Co., a Denver fleet operation. The dual front wheel designs have been operated for more than five



Above: Newest Garnett model is this three-axle transport. The unusual front overhang is made possible by great load capacity of front wheels

years and about one million miles in the service of this latter company.

With this construction 20,000 lb. has been successfully carried on the front axle, and, according to Mr. Garnett, even with this overload, the steering is as easy as that of a conventional truck designed for lighter loads. Two reasons are given for the ease of steering. First, due to inherent design, each wheel rolls on the ground as it pivots about its king-pin support. Second, the bearings upon which the wheels turn are so large and the supports so strong that friction is reduced to a minimum and there is no chance for parts to become mis-aligned or to bind under load or road stresses.

The construction consists of a large tubular steel axle which is fastened rigidly to the chassis just
(TURN TO PAGE 78, PLEASE)



Above: Although the top sign reads: "Drivers Keep Out," the mobile shop has racks for driver report cards indicating nature of needed repairs

Left: Mechanic Michael St. John is at work in one end of the rolling shop. Note the air-compressor, work bench, racks for spare parts and tools and good lighting within shop



Above: A rear corner of the shop houses the acetylene welding equipment and spark plug cleaner. Spare gaskets are stored above the door

KEESHIN MOBILE SHOP

Speeds routine maintenance at Chicago terminal and keeps trucks out of main shop except for big repairs

IT is figured that the new complete mobile shop of the Keeshin Motor Express Co. saves the work of at least one mechanic, both day and night, and also considerable operating time for the several hundred Keeshin highway freight and city pickup and delivery trucks which are using their big Chicago terminal.

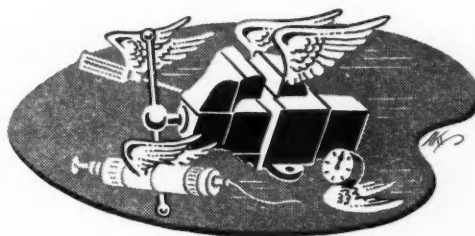
This remarkably complete little mobile shop, with air compressor, power tools and repair parts, is built on the chassis of an old Model A Ford truck and is shifted about anywhere that it is needed in or around the big terminal buildings which is some 500 ft. long and almost as wide, including the outer side docks. Thus the unit saves a lot of the time of the mechanics in carrying their tools back and forth; and the unit can handle most of the repair jobs that used to require that the trucks be

taken out of service and sent to the main company garage about two miles away.

The shop was constructed by extending upward the sides and ends

of an old open-top truck body already on the chassis. These extensions have outside sheet metal covering, and the top is of 6-ply plywood. The shop

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A misty hush hangs over a great city at sunrise. A new day is silently moving westward. Most of America is still asleep. Five o'clock in New York; four A. M. in Chicago, three o'clock in Denver; two in San Francisco.

But behind the quiet canyon streets, the wheels of our swift-moving civilization are turning. They never stop their endless turning.

Day and night, the flow of goods and commodities must go on—night and day—for this is the bloodstream of our national life.

Singing wheels that serve America. A vital—free enterprise at work. A great industry—working to keep those wheels turning . . . an industry that speaks its own language "Heist the bob-tail. Come on—heist. Heave the anchor on that double-bottom. Push 'em up, monkeys let's roll. Balloon freight, moving out. Button 'er up, here's a hot one. Boss 'er in—follow 'er around—easy. Okay Hot Shot, put 'er to bed."

Cross currents of a never-ending stream of goods and commodities. For the city's demands are great. From 30 miles away, from across the river, from 100 miles in the valley, from the railroad yards, from the docks, from 200 miles across the

Dramatic movie of the trucking industry emphasizes role of motor transport in both civilian and military life of the nation

EDITOR'S NOTE—The accompanying article is an edited version of the narrator's script of the movie "Singing Wheels," and should serve to familiarize all fleetmen with the general character of this new all-truck motion picture. Produced by Wilding Picture Productions, Inc., Detroit, the film was made under the auspices of the Motor Truck Committee of the Automobile Manufacturers Association. To Dale Cox, of International Harvester, chairman of the AMA's Motor Truck Public Relations Committee, and to Arthur D. Butler, manager of AMA's Motor Truck Division, go the personal credits for the achievement. Prints of the film are available for showing before associations, schools, clubs and other groups from the American Automobile Manufacturers Association, Transportation Building, Washington, D. C., from American Trucking Associations, Inc., 1013 Sixteenth St., N.W., Washington, D. C., or from state motor truck associations. Photos at right are from the film and depict typical shots of trucks at work.

mountains—300 miles, 500 miles . . . from the middle west, the south and the north . . . goods and commodities from all over America. For the city must live—the city must eat and be clothed—must work and play. And great, unending, infinitely varied are the needs of the city.

But the city also has much to give in return. A set of dishes for the farmer's wife, machine tools for a garage in the valley, magazines and rayon panties, washing machines and candy, tractor parts and fancy shoes, teething rings and cameras. Off to the shipping wharves, off across the



mountains. A hundred miles, 500 miles. All across a nation.

"That's it. Okay. Button 'er up.

"Okay . . . take it away.

"Okay . . . we roll."

We roll . . . on the singing wheels that serve America . . . a tremendous, fast exchange of goods and commodities—rolling on purposeful wheels. Thirty miles away . . . a hundred miles across the mountains. Fifty-three in New York—two-thirty in San Francisco. Most of America is still asleep. But the trucks are rolling. All day, they roll—and all night.

America can't wait. You want what you want when you want it. So the trucks are rolling.

Down from the dairyland, gallons of milk pasteurized, certified and rushed to the city. Sealed and delivered and ready for breakfast.

Fuel for your engines, your cars and your factories.

Up from the sawmill, lumber for houses.

Girders for building, bridges and railroads.

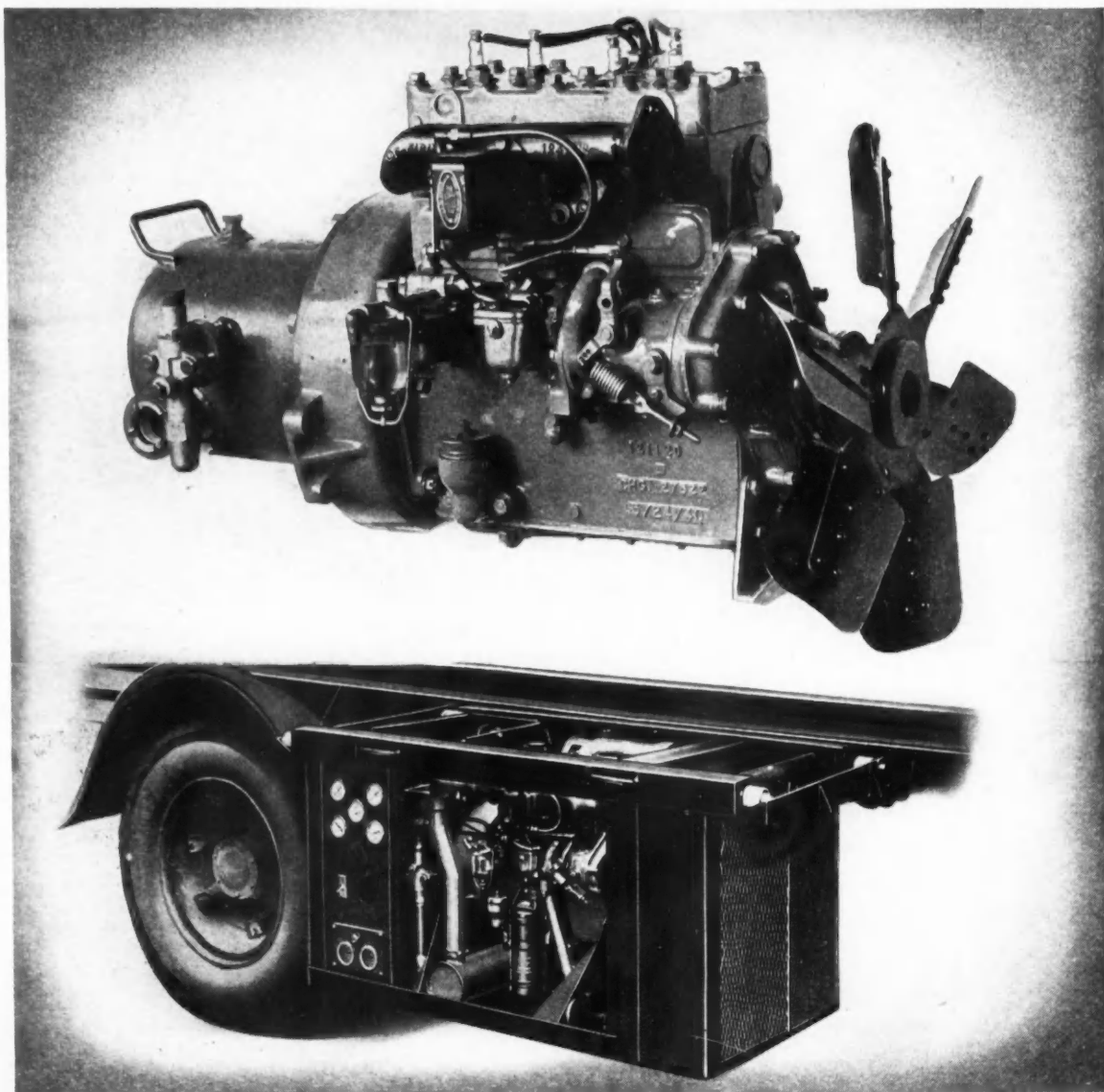
Hay, feed and grain for cattle and horses.

Ham on the hoof and eggs by the million.

Furniture and breakfast food; circus tents and peanuts. Garden truck and radios; silk socks and concrete.

(TURN TO PAGE 80, PLEASE)





Top: Waukesha truck-type ice engine showing four-cylinder power unit directly coupled to two-stage rotary compressor

Above: Power unit, complete with all controls is housed in steel cabinet which rolls out intact to make servicing easier



AN automatic refrigerating plant for truck installations, complete with its own powerplant and all necessary auxiliary equipment, and wrapped in a single easily-accessible "package" has been announced by the Waukesha Motor Co., Waukesha, Wis. Known as the Waukesha Truck-Type Ice Engine, it incorporates most of the features already proved in this manufacturer's railroad and bus air-conditioning applications.

The Truck-Type Ice Engine has a

two-ton refrigeration capacity as measured by its ice melting equivalent, and uses Freon gas as a refrigerant. It incorporates a gasoline engine, rotary compressor, radiator, condenser and auxiliaries in a rugged housing and pressed steel chassis which is supported beneath the truck or trailer by a cushion wheel mounting. It provides such advantages as easy accessibility, automatic control (start, stop and safety), high refrigeration capacity, and adaptability to various types of evaporators. To in-

sure maximum efficiency, Waukesha also offers a Truck-Type Evaporator which is specially designed to operate in complete coordination with the Truck-Type Ice Engine.

Heart of the system, and most important part of the Ice Engine is the engine-compressor power unit. This consists of a four-cylinder Waukesha gasoline engine and a rotary-type refrigerant compressor which are direct connected at the engine flywheel by a rubber cushioned drive. The engine is of 2½ in. x 3⅛ in. bore

WAUKESHA

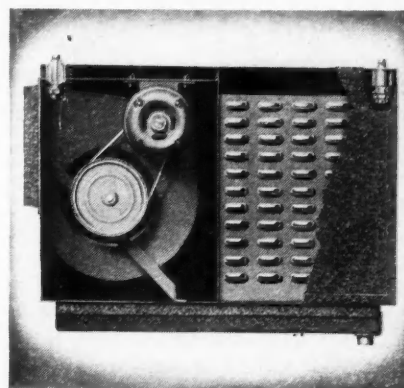
ICE ENGINE

**Automatic, self-contained
truck refrigeration unit
features a 4-cyl. engine
and new rotary compressor**



and stroke, developing 8 to 14 hp. in a speed range of 1000 to 1800 r.p.m. It incorporates an aluminum alloy crankcase, aluminum pistons, molychrome iron cylinder block and connecting rods and crankshaft of high-carbon, heat-treated steel. The piston pin bearings are bronze bushings; connecting rod bearings are precision type, steel-backed babbitt; and the main bearings are deep grooved, single row ball bearings which insure long life with reduced friction and power loss.

Engine oiling is by a pressure system—a gear driven pump forcing oil directly to the camshaft, auxiliary shafts and timing gears. The camshaft distributes oil under pressure to crankpin jets, drilled in the crankcase oil header, which direct intermittent oil streams to the large end of each connecting rod. Oil mist lubricates main bearings, pistons, and cylinders. Cooling is by a gear-driven centrifugal pump which forces water throughout the jackets, around the valves and across the head, and thus



Evaporator unit incorporates cooling coils and Sirrocco-type blower

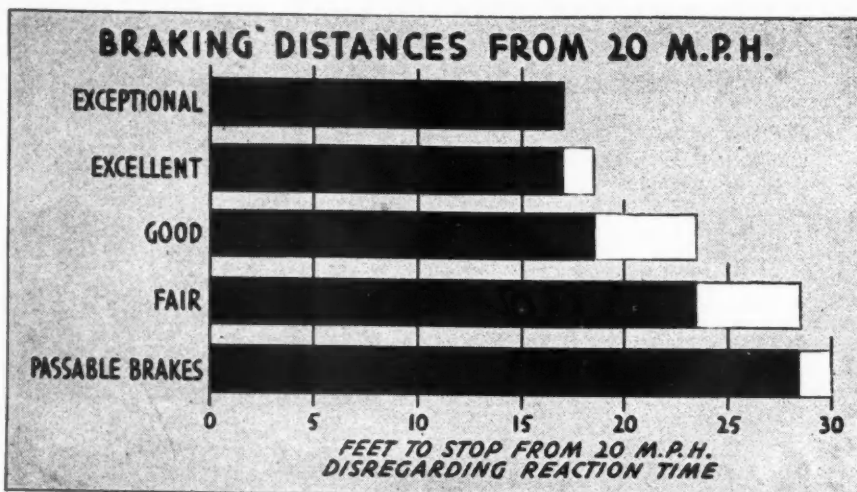
assures adequate positive cooling at all times and under all weather conditions.

The large fan mounted directly on the crankshaft, and driven through a friction member in the hub, serves the double purpose of cooling the refrigerant condenser as well as the engine radiator which are located in tandem at the forward end of the unit. Fuel is supplied by diaphragm pump to the carburetor, and a large oil bath air cleaner is rigidly mounted directly below. The gear-drive fly-ball governor mechanism is enclosed, and mounted directly on the engine case, driven and lubricated by the timing gear system.

The electric system consists of a 12-volt starter with automatic solenoid switch thermostatically controlled, and ignition by battery distributor and coil. Provision is also made for a 400-watt, 12-volt generator belted to the crankshaft to furnish independent power for the evaporator blowers located inside the body. For trailer installation, a separate 12-volt battery and fuel tank is needed if refrigeration is required during periods when the tractor is unhitched.

The compressor is a compound, two-stage, rotary type which is compact, light-weight and especially adapted to mobile applications. It is simple and has but one outside mounted check valve in the suction line—there are no valves within the compressor itself. Being valveless, it is ideal for low temperature operation, and the ten Nitralloy vanes of the rotor provide continuous com-

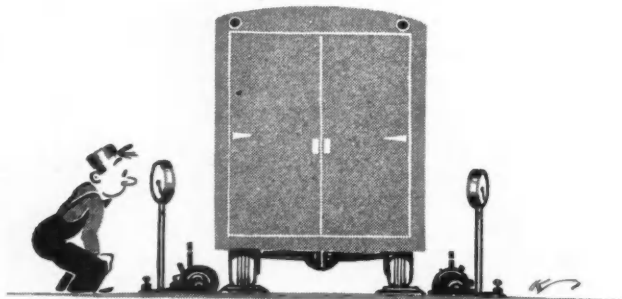
(TURN TO PAGE 64, PLEASE)



Council's stopping standards. White sections indicate range for classification

STANDARD BRAKE SCHEDULE

Safety Council prepares a guide to brake servicing intended to standardize routine and promote safety



WHAT is believed to be the first standard brake-service schedule ever compiled by an independent agency has been completed by the National Safety Council, Chicago. It was prepared by a committee of specialists named by the Council at the suggestion of the United States Asbestos Division, Manheim, Pa. The Council has released it for publication in the hope that eventually it will be adopted by the entire brake servicing industry.

The schedule is essentially a checklist of the mechanic's operations, designed to provide a common knowledge of what careful brake work includes, and to insure safer operation of the vehicle. It consists of a preliminary examination and two groups of operations in brake maintenance, plus additional steps for vacuum and air-operated brakes. It is simple enough to be understood by passenger car owners as well as fleet operators and should serve as a pledge of honest and uniform brake servicing standards by the shops which follow it.

The Council emphasizes that it does not conflict with official inspection standards, but complements them. The complete schedule follows:

1. Preliminary examination—

a. Test both service and hand brakes with brake testing machine if available, or drive the vehicle on the road to determine the brake "feel," pedal pressure, deceleration, and tendency to swerve in sudden stopping.

b. Place vehicle on lift, if available, and examine brake control system for loose or defective parts. Examine thickness of lining through "feeler" holes if available.

c. Pull the front wheel with the thinner lining and examine the brake assembly. This will indicate the probable condition of the other brakes, except in borderline cases.

The above examination shows brake performance and some of the more obvious actual or impending defects. If this inspection or the driver's report indicates unbalanced braking, excessive wear, or borderline conditions, proceed with the proper inspection, adjustment and balancing as outlined below.

2. Inspection, Adjustment, and Balancing. (Items marked * require additional operations or materials with an extra charge.)

- Pull all wheels.
 - Examine linings and shoes for loose rivets, improper contact with drum, worn
- (TURN TO PAGE 74, PLEASE)

The Hardest-Working Trucks in America!



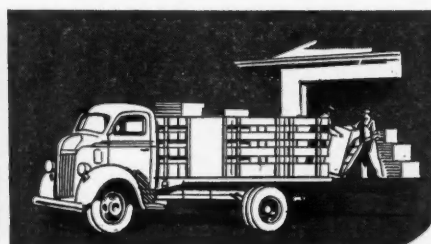
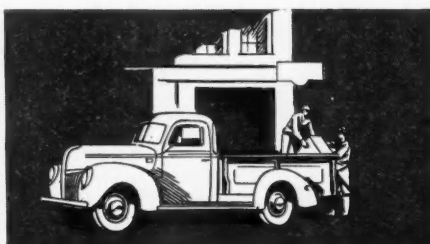
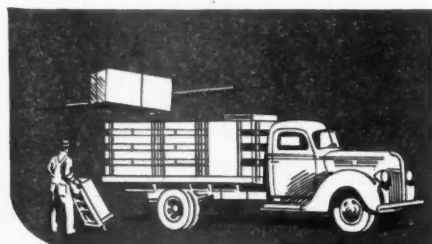
Dual wheels and heavy duty tires as shown at slight additional cost.

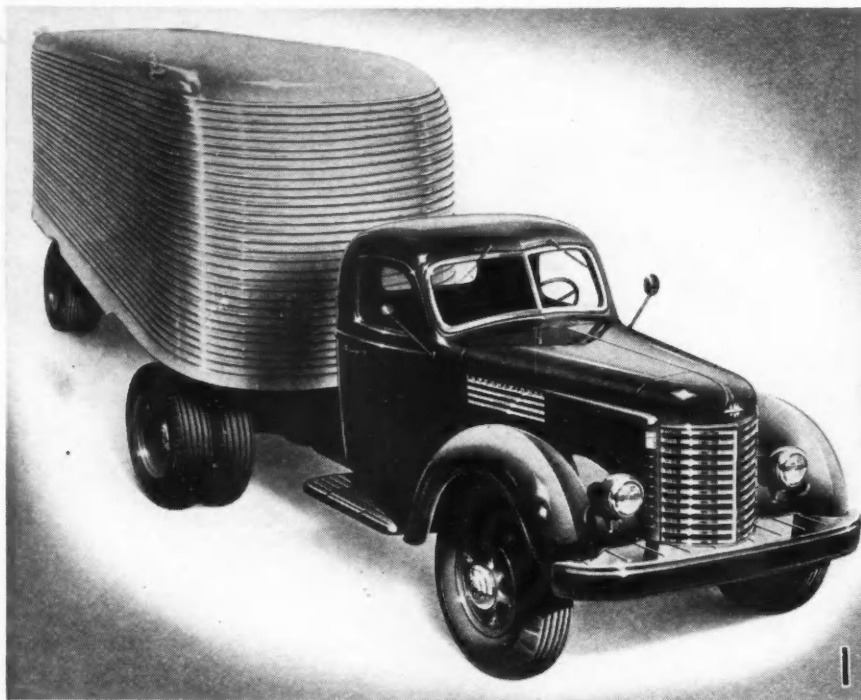
FORD TRUCKS are on more jobs today than any other truck. More Fords are in use by actual registration. There are Fords in nearly all of the nation's biggest fleets. What do these facts indicate? Just this: Large and small operators are entirely satisfied with the *high efficiency* at *low cost* of Ford hauling equipment. There are Ford units for practically all America's trucking jobs. There's one for yours. Without cost or obligation, call any Ford Dealer for an "On-YOUR-Job" Test.

★ ★ ★

Three engines: 95 and 85 hp V-8—new 30 hp 4-cylinder economy engine for light duty. Six wheelbases — 42 body and chassis types.

**FORD
TRUCKS**
AND COMMERCIAL CARS





HEAVY-DUTY INTERNATIONALS

**Five models, added to '41 line,
gross from 14,500 to 27,000 lb.**

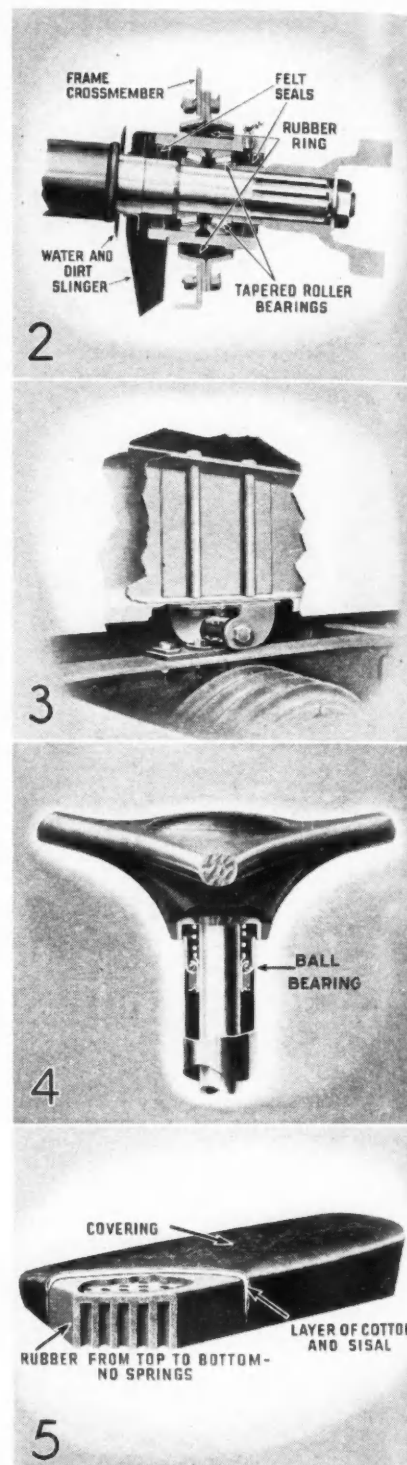
WITH the addition of five new heavy-duty models International Harvester Co. has completed its 1941 line of trucks. The lighter models of this new line were described in the December issue of *COMMERCIAL CAR JOURNAL*.

Features of the new heavier models include easier steering; new styling; new cab comfort, including new foam-type, sponge-rubber seat cushions; larger, easier-riding springs; new, improved frame construction; new rubber-mounted propeller shaft center bearings; new engine features;

new Hi-Tork hydraulic brakes; new, improved vacuum-power brakes; and larger, quicker-acting air brakes.

Carrying capacities of the new models—cab, body, equipment, and payload—range from 10,000 to 18,000 lb., and gross vehicle weights from 14,500 to 27,000 lb. Model K-6 has a carrying capacity of 10,000 lb.; Model K-7, 11,000 lb.; Model K-8, 12,000 lb.; Model K-10, 14,500 lb., and Model K-11, 18,000 lb.

Models K-6 and K-7 are available
(TURN TO PAGE 67, PLEASE)



1. New model K-7 tractor has 134-in. wheelbase and can carry 11,000 lb.

2. The propeller shaft center bearing features new tapered roller bearings

3. Cabs are three-point mounted on new rubber-insulated hinged joints

4. Ball bearings in steering jackets improve handling & gear performance

5. Comfortable all-rubber foam-type seat cushion has plenty of air space



6,890,000 MILES' service from the Exide Batteries in fleet of Michigan Bakeries, Inc.

OPERATING a total of 106 heavy trucks and delivery cars in six Michigan cities, Michigan Bakeries, Inc., with headquarters in Grand Rapids, have been using Exide Batteries for the last 2½ years. They report excellent service and long life from Exides, with an average of better than 65,000 miles per battery. Altogether the Exides in this fleet have covered 6,890,000 miles!

A record like this speaks well for Exide Batteries, and also for the maintenance methods of the fleet operator. It is a fact proved in hundreds of the country's largest fleets that there is no surer way to reduce battery cost per mile than to install Exide Batteries and then to give them only the simple periodic attention which they need.

This develops to the fullest degree the long life and faithful dependability for which Exides are famous. It is the way to cut your own battery cost per mile to rock bottom.

25% longer life is built into today's heavy-duty Exides. They are also available with wood and fiberglas separators for "cycling" service. See your Exide Distributor, or write us for details.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
 Exide Batteries of Canada, Limited, Toronto

Part of the Grand Rapids fleet of Michigan Bakeries, Inc. This and similar fleets in Battle Creek, Lansing, Jackson, Traverse City, Muskegon, and Kalamazoo, Michigan, are equipped with Exide Batteries.



Exide

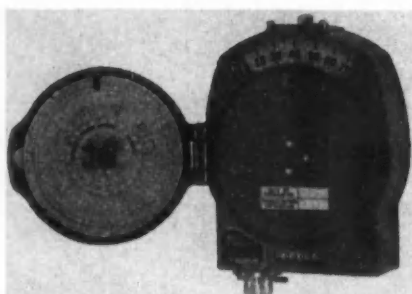
**HEAVY-DUTY
TRUCK BATTERIES**

SHOWCASE OF NEW PRODUCTS



Sangamo Tachograph

A new truck movement recording instrument known as the Sangamo Tachograph is announced by the Sangamo Electric Co., Springfield, Ill. Because the instrument incorporates its own speedometer, directly attached to the truck's speedometer cable, it is possible to record actual distance traveled between stops and speed in miles-per-hour as well as time movements acti-



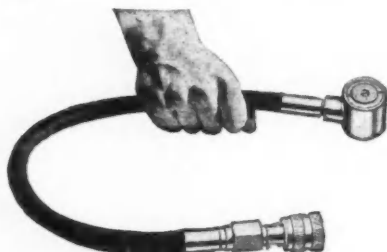
vated by the 30-hour jeweled movement clock (located in front cover, not shown in illustration). Three separate stiluses are used to record speed, distance and vibrations, providing a complete check on truck movement and operation.

A log is thus provided automatically that will enable owners to check on various items of time and cost. A comparison of charts on the same runs, for instance, will show the most economical route and the best time of day or night for the run. Costly driving habits, such as excessive speed and unnecessary lay-overs, will be shown on the chart. In case of accident, there is undisputable evidence regarding the time and speed the truck was running.

An electric circuit provides illumination for the speedometer dial which is usually placed in full view of the driver. A new booklet, "Savings & Safety," gives full details.

Small Ram for Tight Spots

A new tool known as the R-263 Midget Ram, designed for attachment to any stan-



dard "Porto-Power" pump, is available from the Blackhawk Mfg. Co., Milwaukee, Wis. With a collapsed height and outside

diameter of 1 5/8 in., the unit provides a hydraulic pressure of 4 tons applicable to operations in hard-to-reach places. The ram body is drop forged and the ram itself is heat-treated to prevent spreading under load. The complete ram outfit includes a 2 ft. hose and half Spec-D-Coupler, patented Blackhawk connection.

Merrill Balancing Outfit

An electronic wheel balancer has been put on the market by the Merrill Engineering Laboratory, 1230 Lincoln St., Denver, Col. This entirely new piece of equipment balances front and rear wheels both statically and dynamically without removing them from the vehicle.

Standard Model No. 680 consists of a cabinet, a pick-up unit, to transform vibrations from the vehicle into electrical energy; a power unit, which amplifies the energy from the pick-up, records the vibration on a meter and controls the stroboscope; a drive and brake unit, for spinning



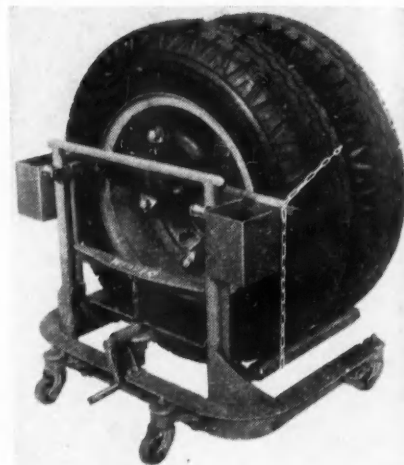
and stopping the wheels: a stroboscope; a rear wheel block and 60 assorted weights. This model handles passenger cars and trucks up to 1 1/2 tons. Heavy-duty model No. 683, for all truck sizes, is similar to the Standard, differing only in the substitution of a heavy-duty drive unit.

Two-Faced Bowser Pump

S. F. Bowser & Co., Inc., Fort Wayne, Ind., has announced an improvement in its Figure 510-K Xacto printing gasoline pump. Ideally suited for fleet installation because it automatically furnishes a printed record of each transaction, the improved model is available with two illuminated faces, so that the dial is visible from both sides. This is a much needed feature when pump is mounted on an "island" or at the curb.

Weaver Wheel Dolly

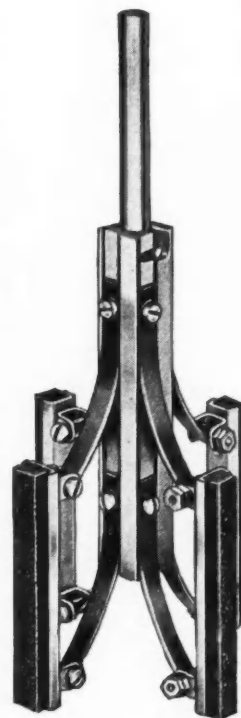
A heavy-duty wheel dolly, designed to handle all sizes of truck and bus dual or single wheels, is available from the Weaver Mfg. Co., Springfield, Ill. The unit is easily moved, being mounted on four heavy



casters, and is equipped with a screw jack having a 6 in. lift. It is furnished complete with chain for holding single or dual wheels upright.

Hastings Corrector Hone

A new corrector hone is available to fleet repairmen with assortments of Steel-Vent piston ring sets, manufactured by Hastings Mfg. Co., 375 E. Mill St., Hastings, Mich. Used in conjunction with a ridge reamer, the hone removes high spots, variations and glaze from the upper cylinder bore. It may be operated by any 1/2 in. electric drill and automatically expands to fill all cylinders from 2 11/16 in. to 4 1/8 in.

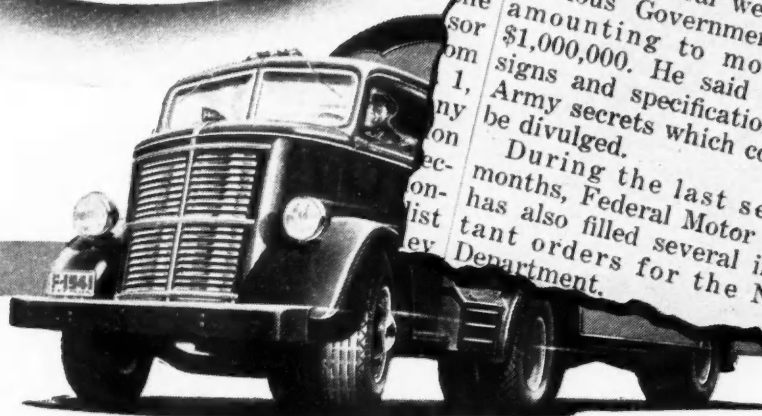


Auto-Lite Lamps

Seelite Fog and Passing Lights have been announced by the Electric Auto-Lite Co., Champlain & Chestnut Sts., Toledo, Ohio. The new units are built on the "sealed beam" pattern, and incorporate a silver-plated reflector. The driving and passing units are interchangeable with amber fog light units.

(TURN TO PAGE 96, PLEASE)

**We're
Working on the
HOME FRONT,
TOO!**



DESPITE the urgency of National Defense needs, Federal is maintaining its production pace to serve the increased demands placed on motor transportation . . . building for it the kind and type of big caliber trucks that take any and every job in their cost-saving stride.

Business maps the battle lines—industry carries the burden of defense . . . and Federal is filling the breach of longer hauls, heavier industrial requirements, unforeseen emergencies with motor trucks that are "built to take it."

That's why you can toss the tough jobs to Federal. They are prepared to handle your needs as you are prepared to handle the all-important needs of National Defense—with confidence, certainty and integrity. Check and double check on Federal's all-inclusive series of trucks from $\frac{3}{4}$ ton to the highest tonnage capacities—with your dealer. Or write the factory direct.

FEDERAL MOTOR TRUCK CO., DETROIT, MICHIGAN

"Ton for Ton in '41—Federal Leads the Way!"

FEDERAL TRUCKS

FOR 31 YEARS . . . KNOWN IN EVERY COUNTRY—SOLD ON EVERY CONTINENT

NEWSCAST



Truck Interests Seek Elimination of Transportation Bottle-Necks

Three organizations interested in the welfare of motor truck transport have made open attack during the past month on those states which, through unduly low limits on size and weight, are causing serious bottle-necks in the nation's interstate transportation system. These organizations are American Trucking Association, Inc., National Council of Private Motor Truck Owners, Inc., and Truck Trailer Manufacturers Association.

Placing the responsibility for these restricting laws in the lap of various "pressure groups" of competing transportation agencies the ATA's statement came in the form of a brief filed with the Interstate Commerce Commission in connection with its three-year-old investigation of size and weight laws. The brief urged that the commission recommend to Congress that there is a need for Federal intervention. At the same time it opposed establishment of specific Federal laws with regard to size and weight limitations.

In a resolution presented before its annual meeting in New York, the National Council of Private Truck Owners went on record with the following statement: "Weight and length limitations in any State should not be more restrictive than those advocated by the American Association of State Highway Officials and/or by the Society of Automotive Engineers as the 'least maximum'."

The brief of the Truck Trailer Manufacturers Association, also filed with the ICC, is most specific. It states in effect that the association favors Federal regulation of sizes and weights but only in so far as such regulation would serve to increase the limits of such regulations in the states which now set low figures without in any way serving to reduce the limits in other states.

Railroad Commissioners Chip In

Taking a different method of approach but aiming at the same objective, the National Association of Railroad and Utilities Commissioners also took action against state barriers at its convention in Miami. Their appeal was made direct to State legislative bodies asking whole-hearted reciprocity not only in the public's interest but as a preventative to increased Federal regulation.

Texas Prospect Brighter

Texas State Senator Houghton Brownlee has expressed the belief that his State "is sure to make some increase" in the 7000-lb. maximum payload limit on motor trucks.

The Senator said that mail regarding the payload limit had increased to such a point that he had been forced to lease new office space to take care of it.

1941 State Legislative Issues Outlined from Fleet Viewpoint

The fact that 43 state legislative bodies will be in session during the early weeks of 1941 and that many issues of vital interest to truck operators will almost certainly be discussed in all of them, was impressed upon members of the National Council of Private Truck Owners by Chester H. Gray, director of the National Highway Users Conference, at the council's second annual meeting in New York, Dec. 10.

The 10 most vital issues, as outlined (and greatly briefed here) by Mr. Gray are: (1) reciprocity, and the problems of highway barriers and ports of entry between the states; (2) sizes and weights, with particular emphasis on the "bottleneck" states; (3) gasoline taxes and registration fees, with the trend slightly in favor of decreases over increases; (4) national defense, with its attendant danger of becoming too all-inclusive, particularly as it applies to highway building; (5) a greater effort to subdivide state highway funds among county and municipal governments in spite of the fact average figures indicate that state management is more efficient than local management; (6) a long range program of highway planning; (7) greater curbing of the itinerant trucker with possibility that what happens to the itinerant may happen to all private truckers; (8) highway safety, with its inherent power of over-exertion (i.e., Texas' 7000-lb. law), and (9) the tank truck which may be in for some malicious regulations that might change the economic structure of the petroleum industry.



W. P. Ferris (left), for many years associated with the automotive equipment industry, has joined the Manley Mfg. Division of American Chain & Cable Co., Inc., as sales manager. Earl G. Dunn (right), well-known automotive engineer, has joined the company as consulting engineer. Both men will headquarter at York, Pa.

Roads Administration Reports on Results of Hill-Climbing Tests

Two charts to be incorporated in the Public Roads Administration's forthcoming report on the hill-climbing ability of trucks under various load conditions will show operators the speed they can maintain on various routes.

Briefly, the charts show the following figures on the basis of tests conducted on tractor-type trucks of light, medium and heavy classifications:

Gross Weight	Percentage Grade	Speed Per Hour
Light tractor-truck		
15,000 lbs.	3%	30
"	4	28
"	5	24
"	6	20
Medium tractor-truck		
18,000 lbs.	3%	30
"	6	21
26,000	3	24
"	4	20
"	5	17
"	6	14
Heavy tractor-truck		
18,000 lbs.	4%	34
"	5	28
42,000	4	16
"	5	12

Using a standard grade of gasoline approved by the Government, the Division of Highway Transport also conducted tests on used vehicles. These indicated that, because of efficient maintenance of used equipment, performance tests compared favorably with and in some instances exceeded the results shown by new equipment.

Material in the charts constitute only a small part of the picture to be covered by the complete report which will not be available for several months.

Business Briefs

Indicative of the trend in used truck sales are figures recently reported by the truck division of Dodge Brothers Corp. Used truck sales by Dodge dealers in November were 26.5 per cent above the same month a year ago and 70.5 per cent above the November, 1938, figure.

American Bosch Corp., Springfield, Mass., has announced the opening of a branch factory at Providence, R. I., to accommodate increased business and provide parallel manufacturing facilities for certain National Defense orders. The plant will occupy the four-story building formerly used by Ceco Mfg. Co.

Edward H. Reuss, Jr., Inc., Philadelphia, has been named by Baker Ice Machine Co., Omaha, to handle the company's air conditioning and refrigeration equipment sales in the Philadelphia territory. A. J. Malinckrodt, formerly chief engineer for Baker and later with Carrier Corp., is in charge.

The Fruehauf Trailer Co., Detroit, has started production on 237 drop frame, insulated Aerovan trailers for the U. S. War Dept. Air Corps. Each will be 28 ft. long, and each will be equipped with wheel dollies for conversion from semi-trailers to full trailers when required.

(TURN TO PAGE 48, PLEASE)



**"One year in four—
Free of all maintenance cost"
—with Lubri-Zol Lubricants**

Lubri-Zol's Fleet products bring home another winner. This time it's the New Hudson Family Laundry Corp., Inc. of New York. They write us:

● Results like those reported here are solely the result of the exclusive Lubri-Zol processing that makes Lubri-Zol Fleet Oil so outstanding.

Lubri-Zol Fleet Oil has a film strength at least 300% greater than non-processed lubricants. It has a solvent action on gum, and is sludge inhibiting. For a fleet which has a high ratio of idling time (like this laundry fleet) this is even more important than usual. Gum and sludge are more easily formed when idling because of lower engine temperatures, greater condensation and hence more acid formation. But Lubri-Zol processing specifically resists these conditions and road service has proved it again and again.

Our engineers can work with you for lower costs on any kind of fleet operation, gasoline or diesel. Write today to: The Lubri-Zol Corporation, Cleveland, Ohio.

"Your Lubri-Zol Fleet products have cut our maintenance between 30 and 40 per cent each year on the 40 units in our operation. The way we figure it, that gives us at least one year out of each four that we are free of all maintenance cost of any kind. When you know that our fleet travels 500,000 miles every year, that becomes mighty important money, and a lot of mileage without maintenance expense.

"We used to have trouble—too much of it. Most of it was sludge, low oil pressure, and excessive motor wear with a varied assortment of plugged rings, stuck valves, overheated motors and so on. For the last four years we haven't had enough trouble to talk about, and we give full credit to Lubri-Zol Fleet Oil. We like it."

I. E. HARTSTEIN

Vice President and Director of Maintenance

Fully Protected by U. S. and Foreign Patents

LUBRI
REG. U.S. PAT. OFF.
ZOL

*Buy your oil on
the cost per mile...
and save... with*

NEWSCAST (Continued from Page 46)

Fred Brenckman Heads Private Truck Group

At its second annual meeting in New York, Dec. 10, the National Council of Private Motor Truck Owners, Inc., elected Fred Brenckman of the National Grange, Washington, D. C., as president to succeed William H. Ott, Jr., Kraft Cheese Co., Chicago. Other officers elected were:

Vice-president, Eastern district—T. L. Preble, Tide Water Associated Oil Co., New York; vice-president, Central district—William A. Quinlan, American Bakers Assn., Chicago; vice-president, Western district—P. Arnold Anderson, Private

Truck Owners Bureau of California, San Francisco; vice-president, Southeast district—E. M. Fetherston, Jr., David Pender Grocery Co., Norfolk, Va.

Newly elected directors include W. E. Blanchard, National Automobile Dealers Assn., Detroit; Oliver J. Corbett, National Retail Tea and Coffee Merchants Assn., Chicago; George Faunce, Jr., Continental Baking Co., New York; D. C. Fenner, Mack Mfg. Corp., Long Island City, N. Y.; E. T. Hadley, Borden Co., N. Y.; Frederick C. Horner, General Motors Corp., New York; Leo Huff, Pure Oil Co., Chicago; B. B. McGimsey, San Antonio Brewing Assn., San Antonio, Texas; J. J. Riley, ages, Washington, D. C.; L. J. Schumaker,

American Bottlers of Carbonated Beverages, American Cone and Pretzel Co., Philadelphia.

A sharp cut in the annual membership fee for private fleets was adopted by the Council. Henceforth dues will be based on a charge of \$1.00 per truck up to 100 trucks, and 15 cents per truck above 100. The minimum fee will be \$25; the maximum \$350. There is no change in the present scale for trade association dues.

Uncle Sam Button

By now, readers have probably seen a new patriotic lapel button showing a picture of Uncle Sam with the inscription "I am PROUD he is MY uncle." But what readers may not know is that it is the creation of Jay O. Lasher, director of advertising, American Chain & Cable Co., Inc., New York; that Parisian Novelty Co., Chicago, is the sole licensee to manufacture the buttons, and that all royalties are being donated to the American Red Cross.

Getting Personal

Joseph Mattson, former director of the California Department of Motor Vehicles, has been appointed to the field staff of the Automobile Manufacturers Association. As a member of the Field Relations Dept. he will represent the association in western states.



Sherwin-Williams Co. has created a separate division devoted exclusively to automotive finishes. Zone managers of the division are (l. to r.): R. R. Owens, Cleveland; R. C. Hall, Little Rock, and G. E. Smith, Philadelphia

The appointment of six new regional truck managers has been announced by the truck division of Dodge Brothers Corp. They are: C. A. Templeton, Detroit; S. W. Kelly, Atlanta; W. S. Woolsey, Pittsburgh; W. J. Teale, Minneapolis; W. H. Kreeb, Cincinnati; Ed Dangerfield, Kansas City.

Dodge also announced the appointment of the following truck representatives: George Parr, Buffalo, N. Y.; J. F. Herneberg, Springfield, Mass., and S. E. Wilcox, Atlanta, Ga.

Paul L. Gillan, widely known engineer, has joined the automotive and industrial engineering consultation staff of Aluminum Industries, Inc., Cincinnati



M. J. Golden, for the past two years sales manager of Willys-Overland Motors, Inc., has resigned. His successor had not been appointed as this issue goes to press. (TURN TO PAGE 116, PLEASE)



● Some people don't yet realize the extreme simplicity of the *Servis Recorder*. They find it hard to believe that a device which "tells every move the truck makes" can be put on so easily.

Attached by Two Screws

That's how simple it is. In fact, you could hold the *Servis Recorder* in your hand, and it would work.

You see, the *Servis Recorder* is operated by the side-sway of the truck itself when in motion. That means you don't need any outside connections, such as gears, flexible shafts, etc. And THAT means a whole lot in

avoiding mechanical troubles.

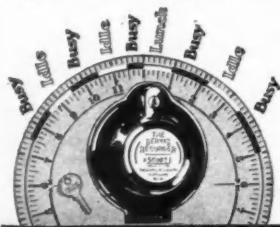
Not Connected with Hub

No sir, we don't need to know the size of your wheels, we don't need to know the name or model of your truck, we don't need to know *anything* about your trucks, except how many you have.

We ship the Recorders to you, and you put them on in about 2 minutes time per Recorder. Thousands of fleets already equipped.

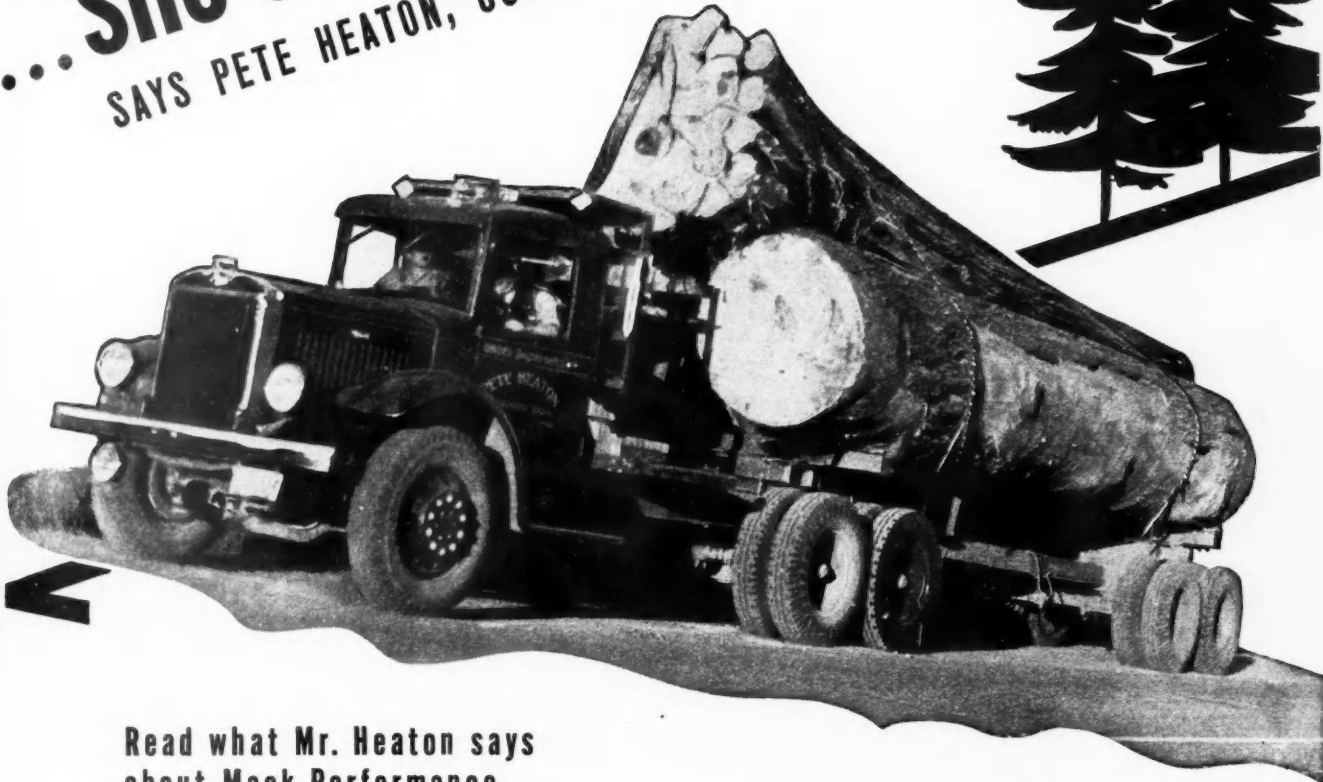
Send for booklet:

"Ten Ways of Getting More Work Out of Motor Trucks." The Service Recorder Co., 1375 Euclid Avenue, Cleveland, Ohio.



The Servis Recorder
Tells Every Move Your Truck Makes

“she’s a pullin’ fool!”
SAYS PETE HEATON, COSMOPOLIS, WASHINGTON



**Read what Mr. Heaton says
about Mack Performance...**

“Uphill or downhill my Mack Truck runs the same! Average of my loads runs about 6,000 board feet. This particular load (picture above) is approximately 8,000 board feet. The truck-and-trailer is paying for itself with a good margin to spare! All in all, my Mack Truck, she’s a pullin’ fool.”



MACK TOTES THE TOUGH LOADS

On root-tangled backwoods roads, fast modern highways, and city streets—Mack Trucks win the enthusiastic praise of experienced trucking men. For power, superior stamina, rugged dependability, and long-run economy. “Bulldog” Macks are sleek, roomy, comfortable—modern in every detail. There’s a special model for every trucking need—from 1-ton Light Macks to the sensational 45-tonners. Write for complete information today!

MACK TRUCKS, INC., NEW YORK, N. Y.



**THE MOST COMPLETE LINE OF TRUCKS IN THE
WORLD—1 TO 45 TONS AND ALL “HEAVY DUTY”
GASOLINE OR DIESEL POWER**

DIAMOND T PAK-AGE-CAR FOR '41

DIAMOND T Motor Car Co. announces a new series of its Pak-Age-Car line for 1941 incorporating many improvements and refinements but without major change in basic design of either the stand-up-drive body or the economical four-cylinder engine.

The air-intake has been redesigned to draw dust-free air from inside the body. A larger oil-bath air-cleaner is supplied as standard equipment, a new and longer emergency brake handle provides more convenient parking control. Hand throttle is now stationary, instead of turning with the steering wheel. The choke control is of a new rod-and-lever type and is positioned for easier handling.



Transmission gears are now controlled by an interlock which eliminates the risk of operating with only partial engagement. This mechanism holds the clutch in release in both low and reverse until the transmission gears are fully engaged—it is impossible to put any load on the gears in any other position. The

clutch has also been improved for softer and more positive action.

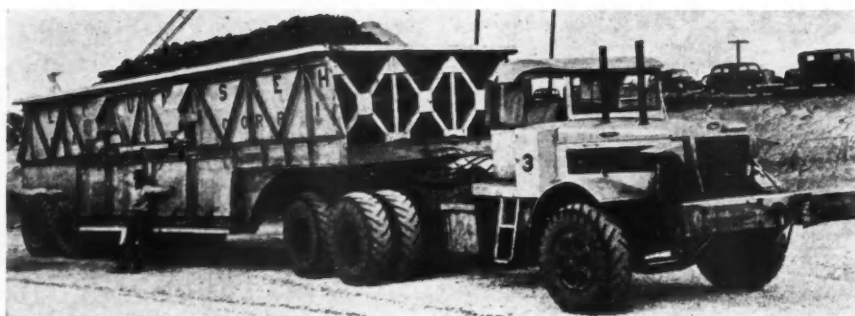
Rear side panels are now carried on piano hinges. This gives easy and immediate access to the "Iron Horse" power unit from both sides. Rear springs are now stronger and of greater capacity and shackle-bushings are of the needle-bearing type.

Additional improvements include a lock for the oil-filter cap and gage, a better and more substantial windshield wiper, more durable hardware of better appearance and a new battery and tool box located on the floor.

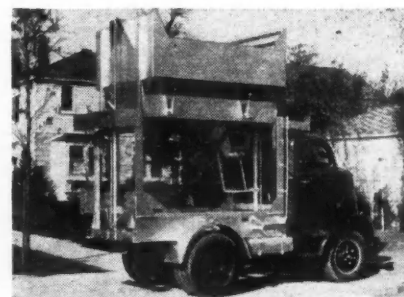
No new models of Diamond T Super-Service Motor Trucks are being announced at this time—production continues with the present extensive line of conventional, cab-forward and cab-over-engine models in all sizes to six wheelers of 15 tons capacity.

New Truck Registrations by Makes by Months

	Auto-car	Brock-way	Chev-rolet	Diam-ond T	Dodge	Fed-eral	Ford	G.M.C.	Hud-son	Inter-nat'l	Mack	Ply-mouth	Reo	Ster-ling	Stude-baker	White*	Willys	Misc.	Total
January..... 1940	143	117	15,997	536	4,345	153	13,282	3,142	56	5,538	572	718	11	22	85	434	173	326	45,650
January..... 1939	143	127	13,615	378	4,002	85	10,188	2,384	47	4,709	492	507	168	25	169	343	88	250	37,715
February..... 1940	94	92	14,145	425	4,341	113	12,092	2,724	60	5,009	425	767	4	31	101	380	182	351	41,336
February..... 1939	134	98	12,007	308	3,821	79	9,224	2,218	44	4,284	398	510	159	29	143	275	97	274	34,102
March..... 1940	137	123	18,398	573	5,356	161	14,993	3,457	76	6,943	534	949	6	24	154	660	233	316	53,093
March..... 1939	150	168	16,565	392	4,852	122	11,886	2,772	39	5,507	433	879	175	17	190	373	148	365	45,083
April..... 1940	156	102	19,429	563	5,654	152	15,444	4,071	92	7,049	656	1,070	7	35	133	840	222	307	55,982
April..... 1939	149	139	16,748	518	4,755	152	11,849	3,243	53	5,713	551	1,025	107	24	173	426	145	293	46,063
May..... 1940	158	143	16,962	501	5,459	151	13,816	4,334	92	6,743	756	1,065	6	25	112	631	225	374	51,553
May..... 1939	184	177	15,899	427	5,185	173	11,706	3,215	44	5,359	666	1,118	78	45	196	442	166	301	45,381
June..... 1940	127	121	14,246	533	4,412	116	11,647	3,357	67	6,291	561	902	20	30	103	574	188	209	43,504
June..... 1939	162	177	14,049	408	4,442	123	10,606	2,740	47	5,105	588	889	53	25	209	446	185	228	40,482
July..... 1940	160	133	16,384	642	4,731	121	14,447	4,252	64	7,104	718	999	78	28	77	476	248	231	50,913
July..... 1939	300	170	15,432	436	4,562	116	12,514	2,872	43	5,744	541	946	31	28	229	379	133	271	44,747
August..... 1940	112	137	17,053	587	4,724	121	12,390	3,900	34	7,397	661	685	93	30	92	470	214	290	48,980
August..... 1939	185	146	14,327	449	4,709	159	12,090	3,031	29	6,101	574	793	28	38	238	377	92	209	43,523
September..... 1940	134	131	11,394	530	3,498	134	10,804	3,204	34	7,081	639	434	99	22	74	551	206	265	39,224
September..... 1939	191	157	9,132	496	4,169	159	7,288	3,091	11	6,297	556	439	18	23	165	497	99	195	32,983
October..... 1940	429	247	14,901	601	3,928	140	14,380	3,212	49	7,755	842	588	104	29	109	588	172	282	48,356
October..... 1939	183	181	13,091	570	3,244	251	7,694	3,198	10	7,136	774	515	20	26	162	464	145	269	37,923
Ten Months..... 1940	1,650	1,366	158,909	5,491	46,438	1,362	133,295	35,653	624	66,910	6,364	8,177	428	276	1,040	5,604	2,063	2,951	478,591
Ten Months..... 1939	1,781	1,540	140,865	4,332	43,741	1,418	105,045	29,754	366	55,955	5,563	7,621	837	280	1,874	4,027	1,298	2,655	408,002
% Change Ten Mos....	-7	-11	+13	+25	+6	-4	+27	+24	+70	+20	+14	+7	-49	-1	-44	+39	+59	+11	+17



Among the world's biggest trucks are five Mack Model FC's operating in the Indiana mines of Tecumseh Coal Corp. Complete with its unusual trailer, each weighs 30 tons and carries a 50-ton load on each trip to the freight yard.



The Heil Co. developed this hydraulic Hi-Lift hopper which makes unloading from either side highly efficient.

PENALTIES VS REWARDS

(CONTINUED FROM PAGE 33)

ager wrote: "There is every evidence that the method of safety education revolves wholly around a disciplinary action and the attempt to build men from the standpoint of selling them the ideas rather than applying drastic discipline has not been attempted. That was in 1936. By 1939, having minimized drastic penalties including discharge for three chargeable acci-

dents in a twelvemonth period, and having increased its merit program, annual accident frequency had been reduced from 658 in 1936 to 270 in 1939. Drivers who might have been discharged under the early system were able to develop their proportion of no-accident months and years for their employer.

Drastic discipline has long been known to fall short of the perfection its sponsors predicted in many forms of human endeavor and there is no reason to believe that auto accident

prevention is its special field. It is the sword method of solving the Gordian knot.

B. Penalty of Time Off without Pay

This disciplinary plan is flexible enough to cover most needs. In our training of drivers through observation and correction of driving defects made by our road patrol, time off without pay has been the most compelling agency in our experience. This pre-accident discipline has been easier to administer than post-accident discipline because the driver did not have the defense of other contributing factors as in the case of an accident. It is quite evident that the employer's motives are preventive and not punitive.

This demerit plan will generally receive the approval of organized labor.

C. The Penalty of Reduced Wages

The driver involved in an accident is required to work a stipulated number of days or miles at a rate less than his base rate. This is predicated upon the theory that the base rate is for no-accident drivers and the driver working at the penal rate is compensating his employer for personal inefficiency. However, the base rate must be adequate for the job. Names of drivers working at the penal rate should be promptly and conspicuously posted. Much of the psychology of the Bedaux system of production bonus depended upon this method.

D. Sharing Accident Cost with Driver

The driver through a payroll deduction pays a part of the expense of his accident. This is a commonly used demerit plan. It is productive of much personal resentment. The cost of an accident is not a fair determinant of the driver's negligence. The method is seldom acceptable to organized labor.

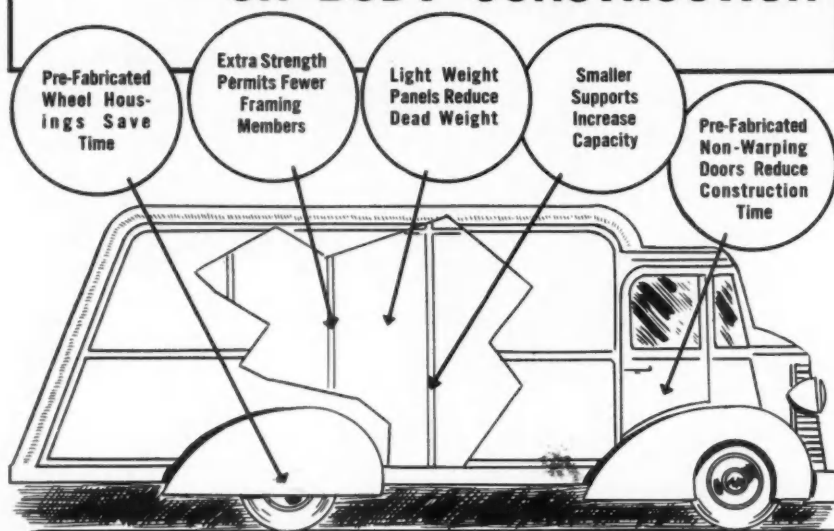
E. Other Demerit Plans

A personal letter mailed to the driver's home and presenting the company's reaction to an accident or safety rule violation.

A posted monthly analysis of all driver accidents describing the accident, indicating the driver's negligence and explaining the manner in which your driver could have prevented the accident. This subjects the

(TURN TO PAGE 54, PLEASE)

HOW HASKELITE PANELS SAVE POUNDS & HOURS ON BODY CONSTRUCTION



CASE STUDY*

A well-known body builder reports that Haskellite Plymetl, used with a recently-developed light-weight steel frame, helped reduce the weight of refrigerated truck bodies over 500 pounds. Inside dimension of the bodies is 6' 3" wide, 6' high, 12' long. Plymetl was used for side panels, side doors and rear doors. Savings in fabricating and assembly time are reported as running up to half of the time previously required for similar bodies.

*Details furnished on request.

● If you want to build light-weight bodies that cost less to power and operate . . . Or, the other way around, if you're after increased capacity without increasing motive power or upping operating costs . . .

Then investigate Haskellite Plymetl. Inherently light in weight—as only wood faced with a thin metal sheet is light—the material itself cuts much dead poundage from bodies. Moreover, because of its great strength and rigidity, Plymetl side paneling will carry a substantial portion of the roof load in addition to its own weight. This means fewer and smaller space-eating structural members, and a further slash in dead body weight.

Easy and simple to fabricate, extremely durable and shock-resistant, Plymetl is truly the modern body material. Use it on your next body job. Call on a Haskellite engineer for full co-operation.

PLYMETL
HASKELITE
PHEMALOID

HASKELITE MANUFACTURING CORPORATION

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OTHER OFFICES IN DETROIT • NEW YORK

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COMMERCIAL CAR JOURNAL
JANUARY, 1941



Above: Refacing valves to factory precision and finish with HALL WET TYPE Refacer.

Above: Getting ready to service seats of Ford V-8 in H. F. Spilker Garage with HALL ECCENTRIC Valve Seat Grinder.

See HALL Valve Servicing Equipment at your Jobber's or write factory today for complete information.

THIS EQUIPMENT BOOSTS REVENUE IN 4 WAYS

- 1 Vehicle back in service quicker.
- 2 Longer mileage between valve grinds.
- 3 Greater operating economy with improved performance.
- 4 Lowered service maintenance costs.

H. F. SPILKER GARAGE MONROE AND GABER STREET TOLEDO, OHIO

October 10, 1940

The Hall Mfg. Co.,
1602 Woodland Ave.,
Toledo, Ohio

Gentlemen:

For your information, we operate a fleet of trucks on long distance hauls. In this fleet there are four different popular makes of tractors, and we have found that we were able to get them back in service in considerably less time than before using your grinder combination.

With the Hall valve refacer, together with the seat refacer, we were able to reduce the required time for valve grind jobs as much as one-third to one-half.

We were able to eliminate the guesswork in tappet adjustments for, with the Hall, they are unnecessary. Simply gauge the required length for the valve stem after the refacing and reseating, allow for the proper tappet clearance, grind the stem to the required length, and the job's done.

Our experience with your refacers have so pleased us that we couldn't help but write to you to let you know of their efficient and accurate performance, and we'd highly recommend them to any and all garage owners and operators.

Yours very truly,

H. F. Spilker, Garage.

By *H. F. Spilker*

HFS/rs

THE HALL MANUFACTURING CO., 1610 WOODLAND AVE., TOLEDO, OHIO

HALL

SYNCHRONIZED VALVE SERVICING EQUIPMENT

(CONTINUED FROM PAGE 52)

driver to a compelling form of criticism—that of his fellow workers.

Excluding accident drivers from group meetings at which no-accident drivers are entertained.

It is difficult to measure the effectiveness of demerit plans. But there is no reason for believing that the habit-conforming agencies used in other forms of adult education will not bring results. We must avoid the error of treating drivers as a special class of human beings, requiring a

peculiar personnel policy. The majority of them need knowledge and guidance and even a demerit plan can contribute to those needs.

Discipline's correct definition is "punishment by means of correction or training."

2. MERIT OR AWARD PLANS

It is often difficult to convince management of the value of award plans; first, because they frequently involve expense and second, because the driver's pay is adequate compen-

sation for his work and his work includes safe operation. The answer to the first is that awards may be inexpensive and to the second, as compared with the cost of accidents, the expense of awards may be justified.

To what extent any merit or award plan is an incentive or just a form of recognition is difficult to determine. They are justified on the favorable reactions which they produce and which it is believed aid in the development of safe drivers.

A. Bonus Plans

A bonus has been defined as a jocular use of the Latin "bonum" meaning "a good thing". Frequently that is a complete description of its value. To be attractive a bonus must produce an adequate sense of reward. With the increasing level of wages this has been frequently impossible. We have found little correlation between a cash bonus and the reduction of accidents. In the absence of training many drivers were unable to earn a bonus, and its discontinuance did not affect their accident record. A bonus minimizes the very thing the employer seeks, the reduction of accident costs. Many bonus plans far exceed the amount of insurance premium which can be saved. The operator in many sections is saddled with a wage scale which makes a bonus prohibitive. This method implies that a base rate is paid for drivers who are satisfactory in all performances except safety, and if the operator wants a safe driver it will cost him more.

Bonuses may be made on many bases including:

1. A pay increase based upon an accumulated period of no-accident time or mileage. This is payable either during a no-accident period or for a stipulated term after the development of a good record.

2. A flat sum is paid in excess of wages as a bonus. Deductions are made for accidents or other violations. We used this system and in a short period developed 168 rules carrying specific penalty values. It produced more ill will than anything else.

3. A sum representing a sum which can be saved by the reduction of accident frequency is announced. At the expiration of the period, no-accident drivers share this saving (TURN TO PAGE 56, PLEASE)

50,000 SLAMS

Without APPRECIABLE WEAR

Fifty thousand vigorous, successive slams on our motor driven testing machine, equivalent to many years of severe service, proved conclusively the exceptional durability of this

IMPROVED No 565693 *Slamtite Lock*

This is the latest refinement in a quick closing, snug fitting, safe lock.

This lock, which has always been popular with the body builder, has now been made easier to install. It can be applied readily and quickly to the thinnest metal doors.

The case is a self-contained unit with a riveted stop.

Save production time with this improved lock. Order a supply now.

EBERHARD MANUFACTURING CO.

Division of Eastern Malleable Iron Co.

CLEVELAND, OHIO

EBERHARD
AUTOMOTIVE HARDWARE
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COMMERCIAL CAR JOURNAL
JANUARY, 1941

again "SERVICE-PROVED" BLACKHAWKS

Set the Pace



9 out of 12

WINNERS
of 1940

Bus Maintenance Awards
use BLACKHAWKS



This seal is found ONLY
on Blackhawk Jacks —
your assurance of a wise
and safe investment.

Every year since 1930, when these Bus Maintenance Awards began, Blackhawk Hydraulic Jacks have been in the top ranks of the medal winners! And this year's "medalists" again prove the superiority behind the Blackhawk "SERVICE-PROVED" Seal!

In the bus and truck field — where lost time means disgruntled customers and lost earnings — the rugged dependability and more-for-your-money value of Blackhawk Hydraulics are a *vital necessity*. On the road or in the shop, they "deliver the goods" — with *dependable* power to lift load and all — smoother, faster, easier and SAFER!

Buy Blackhawks — keep your rolling stock rolling with "Service-Proved" Hydraulic Jacks!

A Product of BLACKHAWK MFG. CO., Dept. J1111 Milwaukee, Wis.

BLACKHAWK



(CONTINUED FROM PAGE 54)
with the employer based upon their contribution to the record.

4. In connection with deductions from the wages of accident drivers a fund is created. The management may contribute to the fund before it is distributed among the no-accident drivers.

Note: General criticism of cash bonus is that it is extremely difficult to maintain its identity; in time employees consider it as rightfully theirs as wages and any deduction or

cancellation brings labor problems. Drivers involved in accidents are more interested in their bonus than in the factors which produced their accidents and this retards a safety program. Bonuses are individualistic and, excluding inter-company knowledge, lack the coercive force of recognition known to the employee's family and friends and the public.

B. Emblems

The emblem partially satisfies the driver's human desire for recognition.

Many forms are in use, but we have found that an emblem which can be worn as jewelry on and off the job is most desired. An attractive pin can be obtained for approximately one dollar and made increasingly attractive and valuable each year at low cost. It is to the driver what a class pin is to a student, and frequently to his friend the equivalent of a college fraternity pin. Its effect can best be determined by the fact that every year we have to increase such purchases.

C. Cards & Certificates of Recognition

It is desirable to issue a card certifying to the driver's skill and covering the period for which an emblem was issued. Or a certificate of the design of a college diploma can be awarded. Both card and certificate should bear the signature of a top ranking executive, for to a driver that confirms its value. Before we adopted a company emblem, our drivers were as interested in cards and certificates as they now are in emblems. The form of award may vary, but to be effective it must satisfy the driver's desire for tangible evidence of his superiority to others of his group.

D. Publicity

The safety records of drivers should be publicized as much as possible. Commendatory notices in a house organ even if his name be only one of several hundred will please him. When awards are made every effort should be made to indicate the extreme pleasure of all his supervisors in his work. Families of deceased employees treasure the simplest evidence of employer approbation. To many drivers the loss of recognition, the destruction of his awards, are in the nature of a personal disaster.


E. Safety Meetings

One large fleet has obtained good results from selecting small groups of drivers and entertaining them at dinner. The expense is considerably less than a bonus plan. It promotes both operating and safety efficiency. Many overlook the fact that while the occupation of driving may seem relatively unimportant to us, it is, or can be made, an interesting career to the driver.

(TURN TO PAGE 58, PLEASE)

DELUXE FILTERS

Receive Their Finest Testimonial



10 out of 12

MAINTENANCE AWARD

WINNERS USE

Deluxe Filters

ISN'T IT WORTH A 3c STAMP TO FIND OUT WHY?

It costs you just 3c to mail a letter for the facts on oil filtration... facts that may mean widespread savings in your fleet operation. Facts that show why fleet operators have found De Luxe the lowest cost filter in filtering efficiency... reduction of motor maintenance costs... improvement of motor performance. You will see, too, the importance of *Controlled Flow—Scientifically Maintained Cartridge Density—Non-Collapsible Cartridge* and the other exclusive De Luxe features.



WRITE NOW for 16-page free Filter Facts booklet that shows why more fleet operators buy De Luxe than any other make. Address: DELUXE PRODUCTS CORPORATION, 1406 Lake Street, LaPorte, Indiana—144 Front Street, W., Toronto, Ontario, Canada.

HERE ARE THE
De Luxe Equipped
AWARD WINNERS

Eastern Massachusetts Street Railway... Connecticut Railway and Lighting Company... Southeastern Greyhound Lines... New Orleans Public Service Company... Teche Lines, Inc. Jefferson Transportation Company... Boston, Worcester & New York Railway Company... Schuylkill Valley Lines, Inc. Vermont Transit Company... Decatur City Lines.

DOES MORE THAN STRAIN OIL... MORE THAN FILTER OIL

Actually Cleanses Oil

TOUGH

but oh so gentle

TOUGH ON OIL-PUMPING . . .

GENTLE ON CYLINDER WALLS

● "About 18 months ago we first tried a set of Hastings Piston Rings and noticed a difference at once . . . the Hastings Oil Ring does not carbon up as fast as others and we get from 5,000 to 12,000 miles more out of Hastings Rings."

This letter, from a North Dakota transit company, is typical of many in our files from fleet operators. Basically they all tell the same story of long life and low cost performance with Hastings Steel-Vent Piston Rings.

HASTINGS MANUFACTURING COMPANY, HASTINGS, MICHIGAN

Piston Rings • Piston Expanders • Valv-Rings



HASTINGS

STEEL-VENT PISTON RINGS

U. S. Patent Nos. 2,348,997, 2,375,409

Stop Oil-Pumping • Check Cylinder Wear

(CONTINUED FROM PAGE 56)

Meetings of the entire personnel offer opportunities for publicly recognizing good safety records. They must, however, be entertaining, informative and reasonably informal.

3. Praise Versus Blame Plans

A successful safety program must maintain a skillful balance of praise and blame. Individuals generally respond more readily and effectively to praise. And the programs must be as individualistic in this direction as

possible. A driver is a human being with an occupation requiring a small amount of skill and a large amount of good attitudes and habits, not a truck driver with a very few human characteristics.

It is desirable in my opinion to found the personnel program on praise and to augment when necessary with tailored blame.

(1). Drivers are more receptive to corrective and educational material under a praise program since it is based on more satisfying activities.

(2). Blame plans remove a driver temporarily or permanently from the effect of corrective knowledge and training.

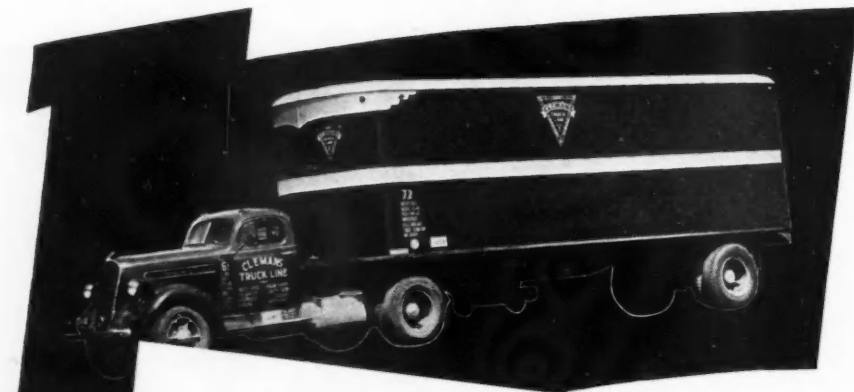
(3). Since the majority of our drivers are more nearly deserving of awards, praise and consideration, plans based on blame deal only with a minority and a small one.

(4). Drivers naturally favor praise plans. In a questionnaire submitted to 1800 drivers in 13 states requesting the rating in importance from the driver's standpoint of 15 of our safety activities—Awards were ranked first and discipline second.

(5). Praise plans promote and maintain better labor relations.

James J. Gibson, Journal of Abnormal Psychology, January 1939, reviewing Toops and Haven's book, "Psychology and the Motorist," wrote: "Certain advantages of a psychological approach to the field (of auto accident prevention) are evident. The moralistic tone of the traffic court and the safety pamphlet gives way to a detached consideration of the behavior of drivers, their habits and the conditions under which they drive. The effectiveness of things like laws, highway markers, speed limits and four-way highways can then be treated as a psychological problem. So-called cases of accidents like recklessness and speeding are seen to be psychologically worthless inasmuch as they are condemnations rather than explanations. The puritanical proposals of many safety reformers can be criticized on purely practical grounds; there is the psychological possibility that a motorist bombarded by fear propaganda is less apt to be frightened into caution than he is to be scared into ineptitude. . . . The driver is an individual and we should be more engaged in understanding him than restraining him."

BEFORE YOU BUY ANY TRAILER..



-CHECK THEM ALL AGAINST EDWARDS WEIGHT-SAVING...

Want the deadweight of your next trailer cut so you can haul more payload? Edwards is a money-maker by that standard. As light in weight as is practical.

It's a money-saver when repairs are necessary, too. That's because Edwards sticks to tried and proved methods of trailer design. Saves much of the excess weight by fabricating from hi-tensile steel. Thus much lighter sections are used to carry the load imposed without any sacrifice in strength.

There are 25 other important money-saving features besides. Investigate Edwards values.

EDWARDS HI-TENSILE STEEL
SEMI-TRAILERS

EDWARDS IRON WORKS, SOUTH BEND, IND.

ATTRACTIVE PROPOSITION FOR QUALIFIED DEALERS. WRITE OR WIRE.



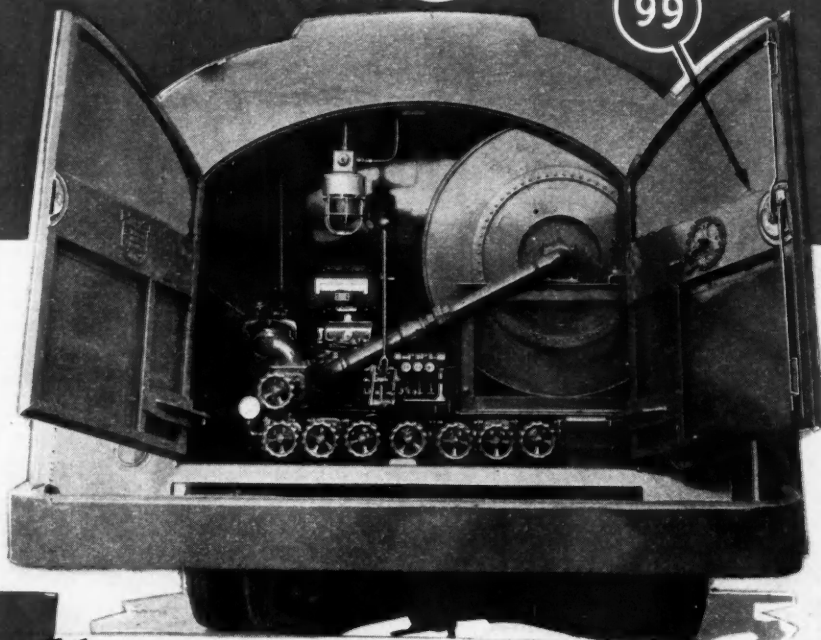
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COMMERCIAL CAR JOURNAL
JANUARY, 1941



Tanks shown are Heil built. Above unit is fitted with No. 79-L Flush Handles and No. 105 Lock, side and rear doors. Lower unit shows No. 99 Rotary Door Lock. Hansen Locks and Handles increase payload — service.

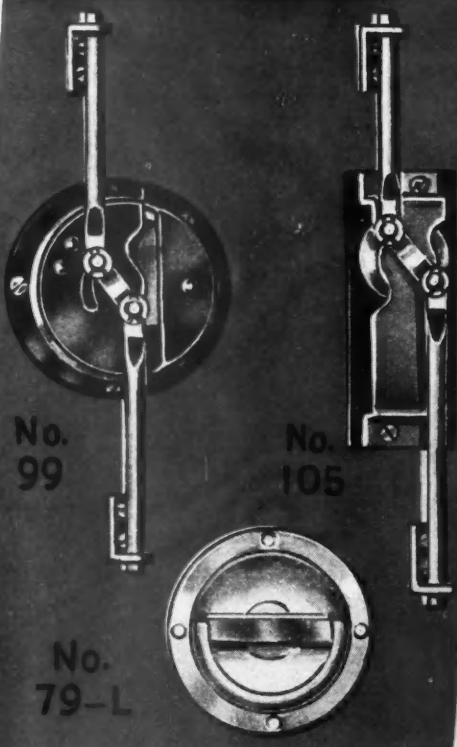
Increased
 • Payload
 • Service
with
HANSEN



Heil Uses Hansen Quality

NO name is perhaps better known in the construction of oil tank truck units than THE HEIL CO., Milwaukee, Wis., founded forty years ago. As early as 1910 they began experimenting with and developing welded steel tanks and bodies. Today, one of the national leaders in this field, they build Heil welded truck and TRAILERIZED tanks for coast-to-coast hauling of oil and gasoline.

Heil TRAILERIZED tanks are built to give maximum payload with minimum dead weight, and contributing to this are their unique construction methods and the accessories used. Frameless tank and running gear are combined in one. Full advantage of payload width is provided with Hansen Flush Handles. Solid, silent doors are kept that way with Hansen Locks—standard on Heil tanks and bodies.



A. L. HANSEN MFG. CO.

5047 RAVENSWOOD AVE.
 CHICAGO, ILL.

KEESHIN SHOP

(CONTINUED FROM PAGE 35)

room is about 6 ft. wide, 12 ft. long and 6½ ft. high. The entrance is by a rear door and three built-in steps. At each side is a generous-sized screened window, and there is an inside heater for winter warmth. Over the rear doorway is a "Drivers Keep Out" sign; and hanging outside are tin slot receptacles where the drivers leave their "Unit Repair Cards," filled

in to indicate the "Nature of Defect or Damage" to their truck or trailer which needs attention. If the needed repair also involves "an accident," the report must be on a red card. On the other side of the card, the mechanic who works on the job lists "Description of Work Done."

Inside the mobile shop is a compact but convenient arrangement of work benches, shelves for extra parts, working equipment and tools. The inside arrangement leaves plenty of working space for at least two men.

At night it is headquarters for Night Foreman Frank Sommers, three mechanics, two tire men and one washer. Day Foreman Walter Booth usually has four men in service.

There are four inside electric lights, and five plug-ins for electric power. The equipment includes a half-inch electric drill, which may be detached from its setting in less than a minute for transfer by means of a 50-ft. outside power extension cord to a nearby truck. There is an acetylene torch for welding and cutting; a spark plug cleaner with 100 pounds of air pressure; a 12-in. bench vise, and a ½-hp. electric emery wheel and buffer. There are hammers, sledges, wrecking bars, heavy wheel wrenches, etc. There is a complete line of bolts, nuts and wheel studs. The stock of extra parts include generators, starters, water pumps, fuel pumps, carburetors, distributors, brake bands, control valves, a complete line of gaskets, and all miscellaneous parts. Also all needed I.C.C. highway safety accessories, such as windshield wipers, lamps, bulbs, fuses, flares, flags, etc.

The mobile shop is regularly stationed outside the main terminal building during a part of the day. During the early night period it is regularly just inside the front entrance and exit of the building, where all outbound highway trucks are given their final inspection and the cargo seals are attached.

At other times the mobile unit may be shifted about, in or around the terminal building, to meet the greatest convenience for prompt repair work on trucks in service and often being loaded or unloaded at the docks. Such shift-about work is aided by long extension cords for light and power, and extension air tubes out from the portable shop. Other attached shop conveniences are two outside roomy wood boxes with side drop-hinge covers. They are attached, one box at each side, near the front end of the body, hanging between the rear and front wheels. To one of these boxes is delivered all heavy extra parts requisitioned for repair use from the company supply room; and to the other box is delivered all salvaged parts of value removed from trucks being repaired.

This Keeshin mobile shop nicely supplements the company's general maintenance program which includes a complete preventive maintenance (TURN TO PAGE 62, PLEASE)



Cars and trucks will be much busier this year—relatives and friends visiting loved ones in far-off camps, trucks rolling along with defense materials for teeming factories. It's "full speed ahead", with thousands of motorists making old cars do another year and other thousands buying new models. It all adds up to *more repair work with fewer men to do it!*

The answer is indelibly clear—in 1941, as never before, **TOOLS WILL TELL!** Plan now, with your Snap-on salesman, for tool equipment that will get more work done and let you have more fun doing it. The business to pay for it is here, plus handsome profits on extra jobs and the opportunities for advancement that always favor the well equipped man.

Write for newest 96-page catalog. Over 550 Snap-on direct factory representatives in principal cities.

SNAP-ON TOOLS CORPORATION
Dept. CCJ-1 Kenosha, Wisconsin

Snap-on
SERVICE TOOLS
The Choice of Better Mechanics



**Super-Service Set
No. 488**
Here's the set for complete service... with every basic tool for a wide range of operations on new and old cars and trucks.

PROVEN

Mechanical Refrigeration for Trucks



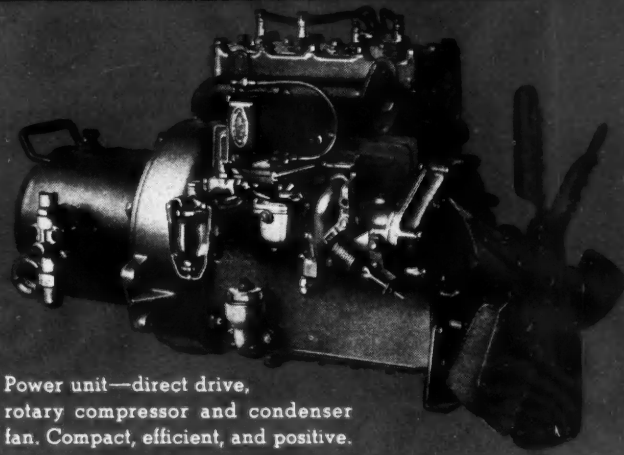
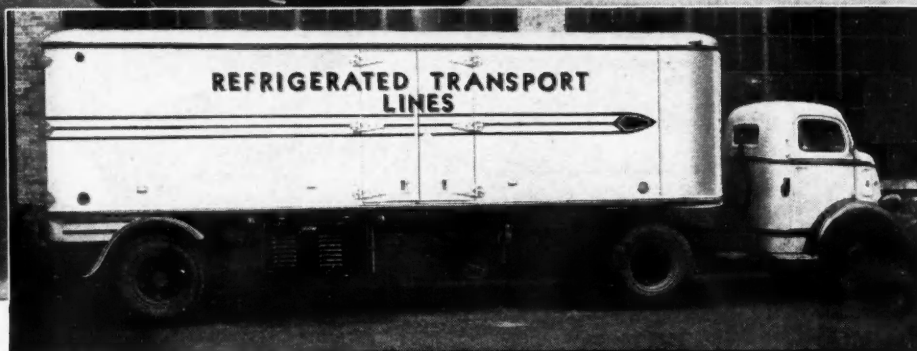
Waukesha light weight Truck-Type Ice Engine, a complete engine-driven refrigerating unit for use with cold plates or blower-type evaporator.

The Waukesha *Truck-Type* Ice Engine comes to the truck field backed by years of successful manufacture of refrigeration equipment for air conditioning of railway passenger cars—and equal success in the air conditioning of cross-country buses—all over America for millions of hot weather miles. It is no experiment! The same basic units, the same engineering and designing skill, the same experience, are all embodied in this new *Truck-Type* unit.

Months of hot weather testing in trucks, on the road, and in the laboratories of the largest and oldest makers of engine-driven mobile refrigeration equipment have *proved* its efficiency, stamina, and dependability.

Now, you may have for your trucks this same independent, automatic refrigeration equipment, so popular with twenty-two of the major railways, and the world's largest fleet of highway buses.

Write for Bulletin 1196.



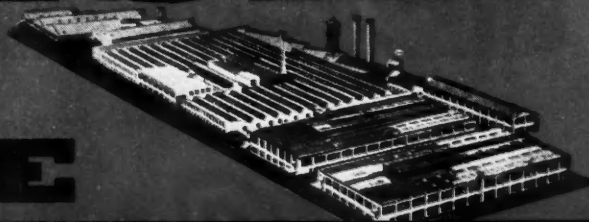
Power unit—direct drive, rotary compressor and condenser fan. Compact, efficient, and positive.

Refrigeration Division, **WAUKESHA MOTOR COMPANY**, Waukesha, Wisconsin

WAUKESHA

TRUCK-TYPE

ICE ENGINE



(CONTINUED FROM PAGE 60)
 schedule for all trucks, with specified inspections and overhaul work at mileage units of 2500, 5000, 10,000 and 20,000 miles, and repeat. All such inspections and overhauls are conducted at the garage. These are supplemented by the variety of daily inspections, minor repairs and routine servicing jobs which are needed to keep the trucks in safe and economical operating condition and which can be handled from the mobile shop. At the mobile unit the off-road

drivers drop each day about 40 to 50 "trouble cards" which require mechanical attention. All of these equipment complaints are checked by the mobile-unit mechanics; and all of the "trouble jobs" which it is estimated will require more than 2½ to 3 hours of mechanical work are shot on to the main garage—but such jobs represent only about 6 per cent of the total complaints. That is, about 94 per cent of all daily mechanical repairs and adjustments can be handled at or from the mobile unit.

These repairs are mostly minor adjustments or repairs which require only from one minute to half an hour. Many of them are head-light and bulb troubles. However, these daily troubles often include such important jobs as rewiring, cleaning and adjusting points on spark plugs, changing generators, starters, distributors, fuel pumps, batteries; replacing axle flange studs and universal joints, and adjusting clutches and steering gears. Some of such extra parts are kept on hand in the mobile unit racks, and others are ordered from or exchanged with the main garage supply room.

Also from the mobile unit is carried on a continuous general tune-up and re-greasing program, with the plan to check off every truck outfit once a week. This work is done mostly at night, one man handling ignition and lights almost exclusively, and another mostly greasing and attention to rear ends, differentials, universal joints and drive lines.

The mobile unit also is headquarters for last-minute inspections of all outbound highway outfits, with a quickly available supply of all required I.C.C. safety accessories. These final inspections require about 10 minutes for each outfit and are made by three day-and-night shifts of inspectors.

For the work which it handles, it is estimated that the mobile unit is saving 20 per cent to 30 per cent in labor costs, though it has not been in operation long enough for complete comparative records. There are also large savings, hard to estimate, in work conveniences and in truck operating time. These total savings have been so encouraging that there is some talk among company officials about fitting up a second like unit, adaptable to road travel, for use in emergency highway repair service.

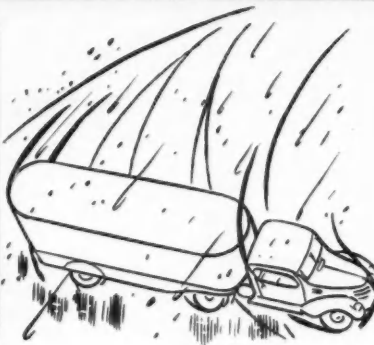


The Chevrolet, equipped with 12-ft. Lindsay Structure body, has joined the fleet of J. Frank Connor, Inc., Hertz Driv-Ur-Self licensee, Newark. The gross body weight is 1870 lb.

Don't worry about winter Install **LINTERN SANDERS** Now!



THIS
 WHAT WEATHER!
 ROADS LIKE GLASS
 NOW N' ELL
 CAN A TRUCK
 STAY ON THE ROAD?



YOU can have good traction in all weathers, maintain an excellent accident record (thereby gaining reduced insurance rates). You can avoid lost time and wrecked equipment. All for a few dollars in Lintern Sanders—and they'll soon come back in the savings you make. Ask for new descriptive folder "Traction" which tells all about them. Lintern Corp., 7960 Lorain Ave., Cleveland, Ohio.

Opportunity for Representatives: A few good territories still available. Write for full particulars.



OR THIS
 O.K., BOSS,
 THESE LINTERN
 SANDERS DO
 THE TRICK—NO
 MORE SKIDS!



Install **LINTERN SANDERS** Now!



... and, you'll do it with amazing success when you put WIX to work in YOUR oil filters. First, the bedrock cost of these new-day Refills would delight a penny-wise Scotsman, but when you see how they perform in stepping up motor oil life, you'll realize at once why maintenance men in America's big time fleets give WIX the nod today!

Take one in your hand . . . note its firm, resilient construction . . . no shrinkage, matting or channeling with this rugged, sludge-thirsty baby on the lube line. Top quality cotton waste PLUS a specially selected, imported fibre give WIX the guts of an elephant, and a filtering efficiency you can't match in the field today.

You can prove this peak performance at WIX's low cost, right on your own vehicles without a single penny of expense. Read the FREE offer to the right, send the handy coupon back to us now, and you'll get your foot down with a snap on needless filter refill expense.

ACCESSORIES CORPORATION, GASTONIA, N. C.

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ACCESSORIES CORPORATION, Gastonia, N. C.
Gentlemen: You must have something to make this FREE TRIAL OFFER stand up, so send me a FILTEREFIL for

FILTER _____ MODEL No. _____
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I would prefer to purchase through the following
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ICE ENGINE

(CONTINUED FROM PAGE 39)

pression, free from vibration. The rotor shaft is mounted on large ball and roller bearings automatically lubricated by the compressor circulating system. The shaft seal is a feature of special importance. Also, amply lubricated, it floats on an oil-proof synthetic rubber mounting. This is a duplicate of the seal used in the Waukesha Railway Ice Engine

and has been proved by more than a million miles of service. There are no exposed moving parts as the compressor is mounted directly on the flywheel housing of the engine, and the entire compressing mechanism is sealed into a welded steel case.

Unusual accessibility is afforded by the cushion wheel mounting. This permits the complete power unit, even in full operation, to be withdrawn from beneath the vehicle quickly and easily without disconnecting the flexible fuel, refrigerant or electric lines.

The unit rolls out on welded steel extensions of the mounting track which may be attached in a moment. This feature speeds up and encourages the service staff to perform its routine inspection, cleaning, and maintenance. The cushion effect of the mounting wheels provides an added protection from road shock which would otherwise be transmitted to the working parts of the unit.

The Ice Engine is built for automatic, thermostatic control. It can be arranged to maintain any desired temperature within the wide range now demanded by variable cargoes. And it is equipped with automatic protective switches which stop the unit instantly in case the refrigerant pressure drops below an established point, in case the engine temperature exceeds a safe value, or in case of excessive cranking that would drain the battery if the fuel supply failed. A separate fuel supply and starting battery makes the unit entirely independent of the truck motive power.

As pointed out above, the new Ice Engine is adaptable to various types of evaporators. Consequently, it may be applied to existing systems with a very minimum of time and labor. But to assure a balanced operation Waukesha also offers its Truck-Type Evaporator which is of the fin-tube type with blower fan, and designed for maximum efficiency in connection with the Ice Engine.

The Waukesha Evaporator incorporates a large cooling coil designed to maintain 15 deg. F. with 90 deg. incoming air when using the full output of the Ice Engine. It is composed of heavy copper tubing with reinforced header bracing as illustrated. The wide fin spacing is an arrangement that minimizes cargo shrinkage and frost accumulation. The Sirrocco type blower is driven by V-belt from a 12-volt motor suspended in the casing. A simple water defroster incorporated in the unit is an especially valuable feature for low temperature operation, providing a ready and effective means of cleansing the coils in addition to frost removal.

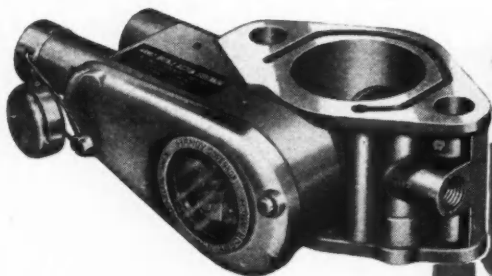
The evaporator is equipped with flexible connections for water and refrigerant lines as well as cushion rubber mountings which protect it from road shock. The entire assembly is enclosed in a sturdy sheet steel cabinet at the bottom of which is a large capacity drain pan.



EXCESSIVE truck speed always adds unnecessarily to the cost of fuel per truck mile. It adds to the cost of lubricant and to the cost of truck maintenance. It also increases accident hazard, which may be considerably more expensive.

The Handy Governor is one certain protection you have against incurring all these costs of excessive speed. Your trucks, equipped with Handy Governors, can go only as fast as you consider safe and economical. You can set the maximum speed where you want it and your trucks cannot possibly go any faster than the setting you make. Handy Governors are thus the cheapest type of insurance you can procure.

Get in touch with your Handy distributor or write us for information.



KING-SEELEY CORPORATION

Ann Arbor, Michigan

World's Largest Manufacturers of
Automotive Governors

HANDY
Visible Action
GOVERNOR

HEAVY-DUTY INTERNATIONALS

(CONTINUED FROM PAGE 42)

in four wheelbases—from 134 to 176 in.; Model K-8 in five wheelbases—from 137 to 197 in.; and Models K-10 and K-11 in four wheelbases—from 149 to 197 in.

The five new models are powered by five sizes of six-cylinder, valve-in-head, replaceable-cylinder engines, ranging from a 241-cubic inch engine developing 84 horsepower at 3,200 r.p.m., to a 401-cubic inch engine developing 114.2 horsepower at 2,600 r.p.m. Torques range from 175½ to 308 pounds-feet at 800 r.p.m.

Tests show that it takes less than half as many pounds of effort on the steering wheel to turn Models K-8, K-10, or K-11, either left or right, and that the improvement on the other two models is nearly as great. There are three reasons for this easier steering. In the first place, the king-pin inclination has been reduced from 8 degrees to 4. Second, the use of twin-lever steering gears results in better leverage. And third, all models have ball bearings at the upper end of the steering wheel tube, and Models K-8, K-10, and K-11 have the twin levers in the steering gear mounted in tapered roller bearings.

Sweeping lines in radiator grille, fenders and hood give these new models a streamlined, distinctive appearance quite similar to, but more massive than that of the recently introduced International Models K-1 to K-5, illustrated and described in December CCJ.

The fenders of the heavy-duty models are more than 10 per cent heavier, and all running boards have a molded rubber step plate with a ribbed surface that protects the running board paint and also prevents the driver from slipping when entering or leaving the cab. The front bumper is of channel steel and serves as an additional crossmember at the front of the frame. Between the bumper and the grille and fenders is a sturdy sheet-steel splash shield and stone guard which also may be used as a convenient step when servicing the engine. A new type of telescoping hood support with an

automatic latch saves time and effort in raising the hood.

The new cabs have more leg room and head room and also improved vision. A foam-type sponge-rubber seat cushion is standard equipment. The rubber extends from top to bottom of the cushion and has vertical, pillar-shaped air spaces providing room for the rubber displaced by the driver's weight to flex without hugging the driver and causing him discomfort. The seat is adjustable forward and back and the back cush-

ion has an adjustment for tilt, independent of the seat adjustment, for maximum comfort. The cab is supported at three points by means of new-type rubber-insulated trunnion mountings, two of which are at the front of the cab and one at the center of the rear. They prevent cab side movement and twist and keep the driver from being pitched from side to side on rough roads.

Other new cab features include new-type high-test safety glass, new (TURN TO NEXT PAGE, PLEASE)

"15,000 TO 20,000 MILES MORE BETWEEN OVERHAULS, THANKS TO

— STEWART-WARNER — MOTOR MILE TACHOMETERS!"



Arrow Rock Co., Los Angeles, Operates 30 Trucks and
All Are Equipped with Stewart-Warner Tachometers



"We operate 30 pieces of equipment, powered by Ford V-8's as shown in the enclosed photographs. We equipped these trucks with Stewart-Warner tachometers when we purchased them.

"From our experience, the tachometers are giving us between 15,000 and 20,000 miles more between overhauls on this equipment . . . than it is possible to get without using a tachometer. We attribute this to the fact that the tachometer shows the driver what the engine is doing and is marked to tell him when he has reached the top speed and when to shift, thus

insuring that our engines are operating properly at all times."

ARROW ROCK COMPANY
By A. W. Beaucaire

Longer service between overhauls—elimination of guesswork for drivers—increased gasoline mileage—reduction of maintenance costs through accurate determination of service intervals—these and many other economies are reported by users of Stewart-Warner Motor Mile Tachometers. Mail the coupon for complete details.

STEWART WARNER MOTOR MILE TACHOMETER

STEWART-WARNER CORPORATION
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1876 Diversey Parkway, Chicago, Ill., Dept. A
I am operating . . . trucks. Please tell me all about
the Stewart-Warner Motor Mile Tachometer.

Name.....

Address.....

City.....State.....

Firm Name.....

(CONTINUED FROM PAGE 67)
instrument panel, headlight beam indicator in instrument panel, and a felt base rubber floor mat with a sweep-out pattern which facilitates sweeping out dirt and dust.

The front springs are from 3 $\frac{5}{8}$ to 7 $\frac{1}{2}$ in. longer, giving noticeably improved riding qualities and spring life, and the capacities of the front springs have been increased 10 per cent or more. Rear springs of the smaller two models have also been increased in length, and in designing

the rear springs of all models careful consideration was given to all factors affecting riding comfort.

The new propeller shaft center bearing has tapered roller bearings and a rubber ring between the bearing housing and the crossmember. The flexibility of the rubber protects the bearing from misaligning forces and reduces the transmission of drive-line noises. The bearing is protected from dirt and water by means of felt seals and a new type of very effective slinger arrangement.

New engine features include the mounting of fuel pumps on the left-hand side of the engines—away from the heat of the exhaust manifold—as an added precaution against vapor lock; new exhaust manifolding for Models K-6 and K-7; new mechanically-sealed water pump; larger distributor; new-type universal heat range spark plugs; and—in the engines for Models K-8, K-10, and K-11—a new type of combination carburetor and governor which combines in one simple, compact unit the functions of positive and accurate governing with dependable, economical carburetion.

A variety of rear axle types are available for these models. Spiral-bevel, double-reduction, and two-speed rear axles with proper gear ratios provide the necessary speed and power for highway and off-the-road service.

Hi-Tork hydraulic brakes used on the rear wheels of Models K-6 to K-10 inclusive were described in the December issue of CCJ.

A vacuum power unit or "booster" is standard equipment on the hydraulic braking systems of these heavy-duty trucks. The capacity of the vacuum cylinders is considerably increased, resulting in much lower pedal pressure requirements. In addition, the cylinders have quick-opening poppet-type valves that are easier to operate and adjust and are much longer-lived. The larger capacity and quick action of the poppet-type valves make it unnecessary to use a synchronizer valve when a trailer is used in conjunction with a truck or tractor. Instead, the control lines can be carried direct to the trailer relay valve.

Air brakes are regular equipment on Model K-11 and are available for Models K-7, K-8, and K-10. Improvements in the air-brake systems include larger-size brakes on the three smaller models; lighter spring pressure, giving better balance on stops in the low-pressure range; a foot treadle instead of a pedal; a quick-release valve for the front brakes; and a relay valve for the rear brakes. The quick-release valve is located close to the front brakes and speeds up the release of air from the brake chambers. The relay valve is located close to the rear brakes and speeds up both the application and release of the rear brakes.

Now! Sealed Beam Headlights



a Truck-Built Heavy Duty Headlamp —for Your Trucks



No. 1214 Do-Ray Stop and Tail Lamp with Tiger-Ey Hex Flex Reflecting Lens. Has extra heavy enameled steel license bracket and new extension angle bracket. For mounting in positions where long extension bracket enables lamp to clear most obstructions.
List price \$2.30



Glaseal Beam Foglight by Do-Ray
For safer driving in fog, snow, or mist. Chrome or black enamel finish—6 $\frac{1}{2}$ " in diameter, with malleable iron bracket. Genuine G-E unit. White or amber lens. Rotary switch and ten feet of silver colored wire. List . . \$5.00

Give your older trucks the safety and dependability of Sealed Beam lighting. Replace old headlamps with Do-Ray's new Sealed Beam Headlamp. Double filament G-E unit can't dim or lose focus with age. Fits all trucks and cars with ball socket mounting. Stainless steel door and black enameled body, with 1 $\frac{1}{2}$ " bolt. Diameter 8 $\frac{3}{4}$ " by 9" deep. Heavy construction throughout. Special body design accommodates any Sealed Beam unit regardless of thickness. "Certified" tag assures you of compliance with I. C. C. regulations.
List price \$15.00 pr.
(12-16 V. available for Diesels.)
Do-Ray Lamp Co.
1458 S. Michigan Ave., Chicago.
Ask Your Jobber

DO-RAY



SAFETY LIGHTING AND REFLECTING DEVICES

BODY-OF-THE-MONTH

(CONTINUED FROM PAGE 29)

on the crane. Engine torque and rim pull had to be adequate for steep-grade operation with a disabled vehicle. The vehicle had to be geared to go to the emergency at high speed and tired to carry a suspended load on the rear axle. It had to be designed a multiplicity of equipment without confusion in location. It had to be fully practical and present an attractive appearance.

The chassis is a 189 in. w.b. BX Mack with a CA dimension of 120 in. It is powered by a 519 cu. in. engine with a maximum torque of 368 lb. ft. Tires are 9.75-22. The truck will travel 48 m.p.h. in over-drive and it has a low speed reduction of 70 to 1. It is equipped with air brakes, directional signals, a heavy-duty generator and a battery of reserve capacity.

The winch and lay shaft has a 20-ton capacity without any compounding by sheaves. There is 200 ft. of flexible steel cable and forged hooks. When pulling at an angle instead of lifting in a straight line, the cable is dropped from the overhead structure quickly, as the blocks are snatch blocks and are used with a universal sheave block. The winch is equipped with a nigger head which is used to hold the vehicle in an upright position while being winched in. The rope feeds forward in the body to two snatch blocks at the floor line carried in proper alignment with the nigger head drum.

On the cab is a one-mile ray spotlight and at the end of the crane is a high-powered floodlight. Locations are such that both lights can be focussed on a vehicle parallel to the wrecker and as close as 15 ft.

On the rear of the crane structure is an 8-in. motor-driven oscillating red light for protection when working in a hazardous position on the highway. Irrespective of position of the wrecker, the light can be made visible in the proper position by an adjustment locked by a wing nut.

The body is of steel with diamond tread flooring. Two external compartments below and above floor line carry equipment. The concealed sprung door just visible below the number 59 on right side opens and

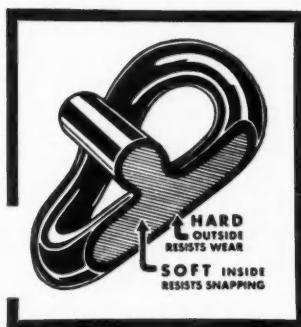
permits 150 ft. of 1½-in. rope to be reeled out for use as bridles, etc.

To drop cable from outer snatch block or focus rear floodlight, a diamond-tread catwalk slides from under floor. To the right of the pintle hook is a quick detachable air line fitting for building up air pressure in the towed vehicle to be used in the event of a breakaway. Towing is done with a rigid bar equipped with special heads and universal joints.

A partial list of equipment would include rubber boots and oil skins, portable floodlights, acetylene and oxygen tanks with 50 ft. hoses and cutting torches arranged to operate in one minute, heavy-duty jacks, chain shackles, ¾-in. special flexible steel cable slings with forged hooks of varying lengths, blocking, planks, sand rope sheaves, shovels and fire extinguishers.

The unit with equipment weighs 21,100 lb.

Pyrene



Use Pyrene Doubleduty chains with Bar-Reinforced links for double mileage at lower cost.

SAFETY-SERVICE MEANS MORE PROFITS

The Pyrene tire chain jobber is no prophet but he has a prophet working for him. This year Pyrene is providing its jobbers and dealers with monthly and short range chain weather forecasts furnished by Dr. I. P. Krick of the Krick Industrial Weather Service and used by leading air lines, movie studios, and public utilities.

They will gladly furnish you with these authentic weather forecasts and will help keep your trucks rolling by furnishing needed chains from their complete stocks which include Standard, Extra Heavy, and Doubleduty Bar-Reinforced in single and duals for all sizes. Insist upon tire chain safety by specifying Pyrene, the uniformly good tire chain. Every cross chain case-hardened for long wear—every side chain link perfectly welded—rigid factory tests and inspections assure uniform quality.

Use our prophet to insure your winter profits.



Pyrene Manufacturing Company

NEWARK NEW JERSEY

ATLANTA KANSAS CITY CHICAGO SAN FRANCISCO

WIN WITH WATER

(CONTINUED FROM PAGE 28)

close that the engine is running too cool to operate efficiently.

The first step in making head or tail of the varying water consumption among the various units of the fleet is to establish a bogey. This bogey would not necessarily be the same for all units if the fleet is made up of various sizes of trucks, although it will probably surprise most fleet operators to find that water consumption

is so nearly similar if the vehicles are operating well.

Mr. Smith found that the bogey for every vehicle in his fleet was 2 qt. per day. Mr. Smith's fleet consists of large busses engaged in urban and interurban transportation of passengers. The vehicles are mostly of one make and engine temperature is controlled by automatic shutters.

The bogey will have to be established by the trial and error method and it will take enough time to gain a little experience after the operator

is sure that the experimental vehicle is in such mechanical condition that there is no water loss due to mechanical defects.

Once the bogey is established vehicles that do not make the grade must be pulled out of service as fast as shop and operating conditions will permit. They must not be put back into service until the trouble has been corrected.

Just what would be accomplished by checking water consumption? In the first place the periodic inspection of the cooling system for leaks could be eliminated or at least made more infrequent because if the water consumption did not increase there could be no leak. It might be advisable to continue a certain number of inspections but the frequent inspections would be unnecessary. This would reduce time for inspections considerably and consequently save money.

The water consumption bogey would also provide a constant check on shutter and other temperature control factors. An engine could not be operating at too high a temperature if the bogey was not exceeded.

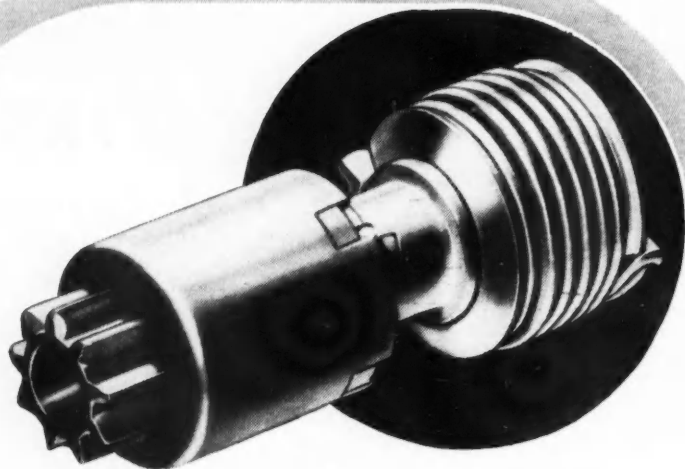
Cracks in the engine block or head would be detected immediately before they became worse or caused a road failure.

Water pump failures, clogged radiators and late spark timing would be shown up immediately. The latter before it could make a dent in the fuel economy records.

If a maintenance system is truly preventive it should anticipate trouble. Periodic inspection catches trouble at some stage in its development. Trouble isolated by a check of the water intake would be caught nearer its inception than the same trouble discovered by periodic inspection, therefore it would be a closer approach to a true preventive maintenance system. Located earlier, the trouble would be easier and cheaper to remedy.

The thing to remember is that checking by the water method provides a daily check but that the benefits of the check are lost unless something is done when the consumption indicates excessive loss. The program should start by compiling a list of the possible sources of leakage. The first time the truck shows excessive consumption all of these sources should be explored.

(TURN TO PAGE 74, PLEASE)



EVERY GOOD START RENEWS *good will!*

Because the Bendix Drive has been made an integral part of more than sixty million engines...designed *into* those engines by capable, conscientious factory engineers...there is no question of Bendix Drive quality and efficiency.

Then isn't it reasonable to assume that the safe and sure way to renew or repair any of those sixty million Bendix Drives is to replace worn parts with time-proved genuine Bendix parts?

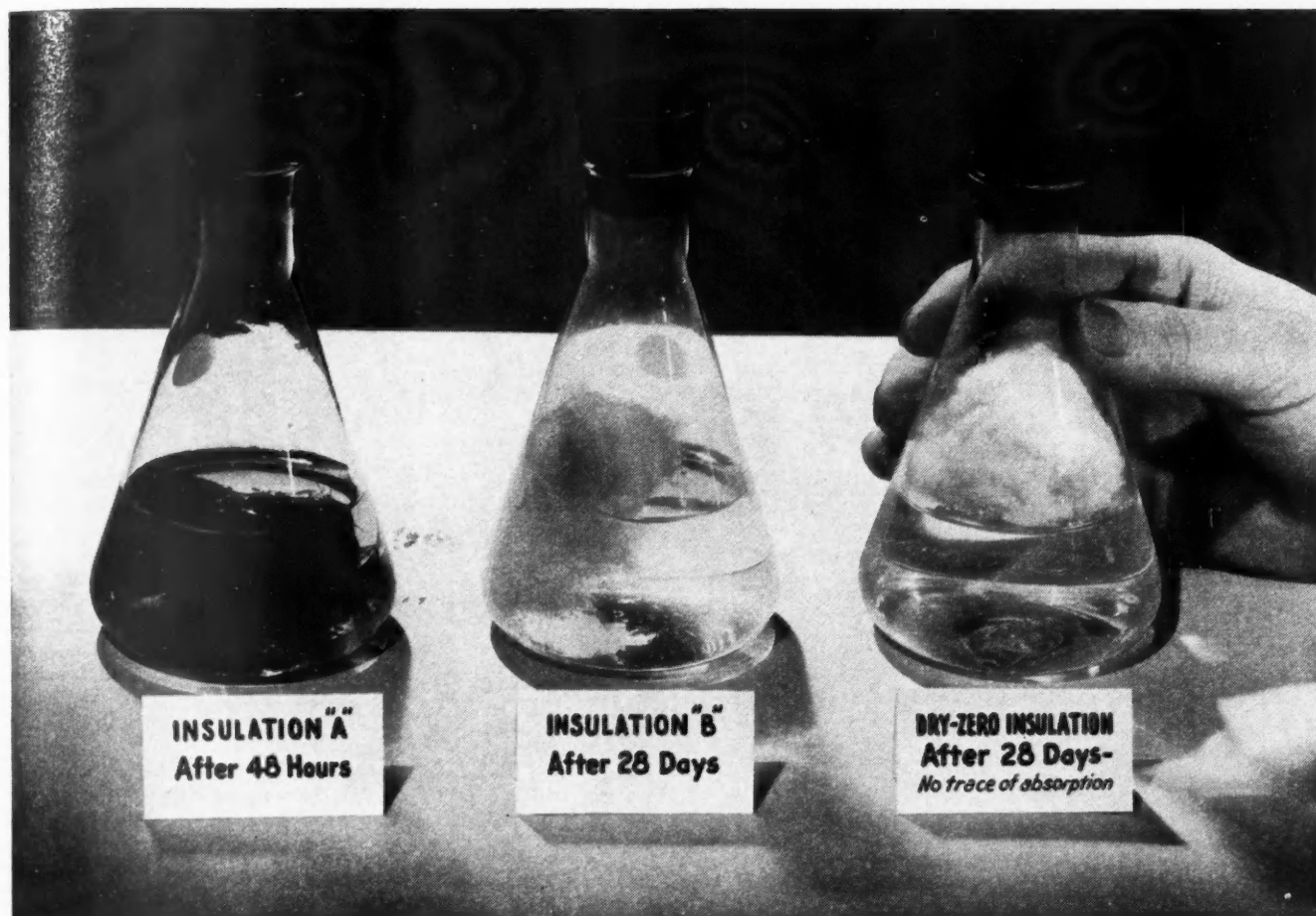
No other concern either knows as much about building Bendix Drive parts, or has so much interest in protecting the good reputation of Bendix Drive. When you sell or install parts in a Bendix Drive, or replace it, *your* reputation goes on trial with the job. Every good start, thereafter, renews good will *for you*.

ECLIPSE MACHINE DIVISION
OF BENDIX AVIATION CORPORATION
ELMIRA, NEW YORK

Renew with
**GENUINE
BENDIX
DRIVE
PARTS**

BENDIX DRIVE

There's a BIG DIFFERENCE in Truck Insulations



When new, most truck body insulations will effectively keep out heat. But, water vapor soon penetrates into the cold interior of the refrigerated body and condenses on the insulation. The insulant then becomes soggy and loses its heat-stopping efficiency. Many insulations which in themselves do not absorb moisture will nevertheless attract and hold water by capillary attraction.

Dry-Zero Insulation, on the other hand, is by nature water-repellent (non-hygroscopic). Its fibres have a wax-like coating that sheds water like a duck's back. Even under continued adverse moisture conditions, Dry-Zero Insulation will remain dry and efficient for many years. In addition, it is extremely light, weighing only one-seventh as much as commercial corkboard. It will not rot, pack, or absorb odors. And, in the new Bound-Batt form, Dry-Zero Insulation is lower in first cost and easier to install. Write, Dry-Zero Corporation, 222 N. Bank Drive, Chicago; or 60 E. 42nd Street, New York.



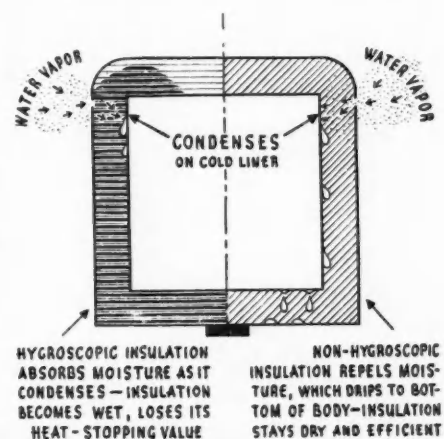
3 OUT OF EVERY 4 INSULATED TRUCKS USE

DRY-ZERO INSULATION

COMMERCIAL CAR JOURNAL
JANUARY, 1941

When writing to advertisers please mention Commercial Car Journal

Why you need a water-repellent insulation



(CONTINUED FROM PAGE 72)

This list would run something like this:

1. Hoses.
2. Heaters.
3. Radiators.
4. Gaskets.
5. Water pump.
6. Freeze plugs.

If they do not disclose the necessity for repairs to the cooling system plumbing, a list should be compiled of the possible causes of overheating. Overheating would result in more

than normal overflow. A check of this list would show whether or not the truck was dribbling its way from place to place.

This watermarked list would show among splashes:

1. Fan belt.
2. Radiator hoses.
3. Valve timing.
4. Ignition timing.
5. Water pump.
6. Radiator shutter.
7. Thermostat.

If neither list turned up anything

of note to the mechanical force it would be well to have a look at the oil for traces of water. If the cooling system neither leaks nor overflows but still loses water, the water must be going some place and it might be into the oil through a crack in the head or block, through a blown cylinder head gasket or through a loose sleeve.

STANDARD BRAKE SCHEDULE

(CONTINUED FROM PAGE 40)

or greasy linings, and worn or damaged shoes. Estimate possible mileage before re-lining will be necessary.

c. Clean drums, backing plates, and brake shoes, removing all grease, dust, and rust.

d. Examine brake drums for wear, scoring, eccentricity, and correct thickness. Tighten brake drums to hub bolts. Resurface or renew drums when necessary and re-line as specified in Step No. 3.*

e. Examine wheel bearing condition and adjustment, quality of grease and grease seal, and renew parts when necessary.*

f. Examine and tighten backing plates and brake support. Lubricate all rubbing metal parts, including cables, but avoid excess that may cause lining to become greasy.

g. Examine brake controls.

(1) Hydraulic—Check for leaks in any part of system. Tighten wheel cylinders to backing plate. Examine level and condition of fluid in master cylinder, making sure that fluid conforms with recommended standards. Check clearance between master cylinder piston and pedal links.

(2) Mechanical—Examine cables and conduits (lubricate if necessary) and tighten conduit brackets. Check angle of levers and freedom of movement of parts and setting of equalizer bars, if used. Replace worn or frayed cables or conduits.*

h. Examine springs and tighten spring clips if used.

i. Examine and adjust hand brake.

j. Make complete adjustment of brake shoes; also of foot pedal links and master cylinder push-rod in case of hydraulic control, or cables, cross shaft levers and foot pedal position in case of mechanical control.

k. Test brakes with brake testing machine or on the road.

l. Provide owner a check list showing conditions observed and work done.

3. Inspection, Re-lining, and Balancing—

This should include inspection and major adjustments under "2" plus:

a. Re-line brake shoes or exchange the shoe and lining assembly. Check lining to drum contour.

(TURN TO PAGE 76, PLEASE)



**TRACTION ...
NOT POWER ALONE
IS WHAT YOU NEED**



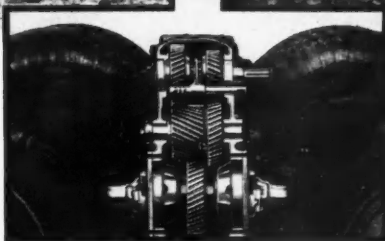
When there's heavy work to do, TWO driving axles under the load are better than one. Use the

THORNTON FOUR-REAR-WHEEL DRIVE

YOU SAVE MONEY!

Take a truck of 1½ to 3-tons original capacity and let us quickly and at low cost convert it to a husky unit of 30,000 lbs. or more gross vehicle weight capacity.

Two ratios, for power and speed, easily controlled by a lever in the cab. Walking-Beam Flexibility—Special spring construction keeps equal load on all four driving wheels—Perfect balance between power and weight.

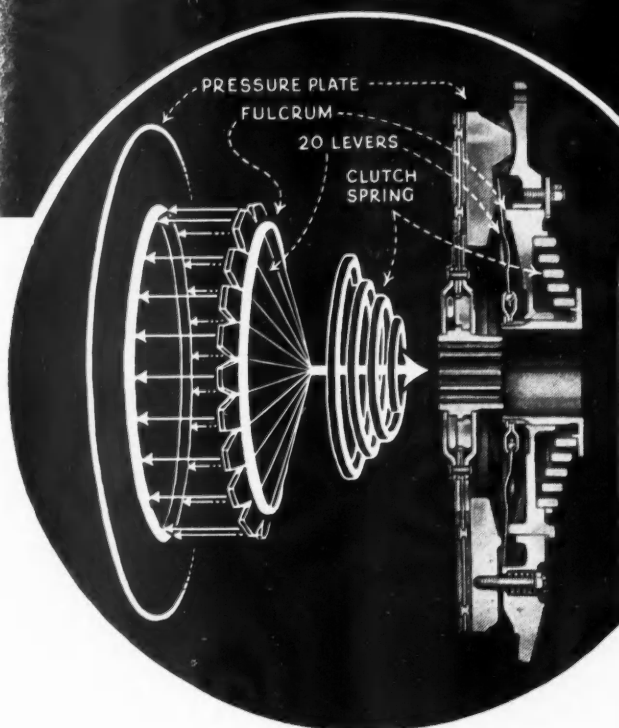
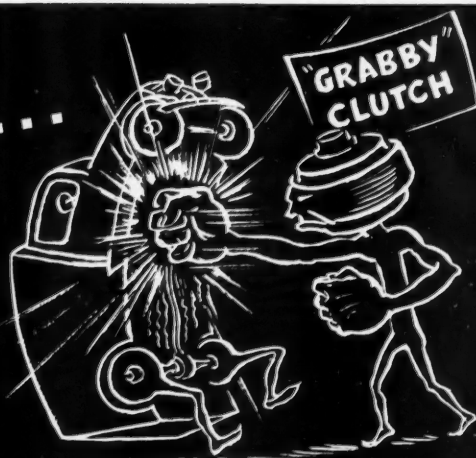


THORNTON TANDDEM CO.
8701-8779 GRINNELL AVE. DETROIT, MICH.

Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL which gives traction when slippery going makes trucks equipped with ordinary differentials helpless.

"When you need TRACTION you need THORNTON"

Don't Let "Grabby Clutch" Hit
Your Trucks a Knockout Blow . . .



LIPE Clutches Eliminate Grabbing by giving you the pressure of **ONE SPRING** equally distributed around the plate by 20 equally spaced levers, thus assuring parallel contact between friction surfaces . . .

INSTEAD of Several Springs exerting unequal pressure at different points that cocks the pressure plate out-of-parallel.

And Lipe Gives You This Further Insurance Against Wear and Adjustment!

A push-out type of release that avoids wear and preserves alignment because the throw-out bearing is in contact and working *only when the clutch pedal is in release position.*

LIPE HEAVY-DUTY CLUTCHES

"roll with the punch" . . . and Avoid the Shock of Engagement!

You know the heavy blows that a grabby clutch delivers to the vitals of your truck. You've felt the punishing shock clear through the floor boards—a shock that hammers the gear teeth, pounds the bearings, distorts the shaft, shears the splines and grinds off rubber. No wonder your trucks require frequent tear-downs for overhaul and repair.

But you never feel shock with LIPE Heavy-Duty CLUTCHES. That's because Lipe Clutches are designed to "roll with the punch" and ease the clutch into a smooth, positive engagement. Strain on the engine, transmis-

sion, universal, driveline and differential is greatly reduced. There is no cocking of the pressure plate . . . no high spots to touch, slip and burn. The friction surfaces come together squarely, smoothly . . . with just enough slip to soften the shock. Then they take hold with a positive grip. Once engaged, they never slip until the pedal is pressed.

Lipe Clutches are built for *more* engagements between tear-downs . . . and for easy, simple servicing. *Any maintenance operation can be done entirely without special tools or fixtures.*

WRITE: Get the full story. Ask for your free copy of the new Lipe Clutch Maintenance Manual . . . TODAY.



W.C. LIPE, INC. Syracuse, N.Y.

(CONTINUED FROM PAGE 74)

b. Adjust so that lining makes correct contact with drum surface. This will probably require resetting of anchors.

c. If hydraulic fluid shows gumminess or contamination with dirt or other foreign matter, flush and refill with standard grade.

The foregoing applies primarily to the braking system. For vacuum, air, and electric brakes, the following procedure applies in addition to the above:

Vacuum Brakes

- a. Check entire system for leaks.
- b. Examine pipes and hoses for kinks,

wear, or collapse. Check trailer hose and connections when used.

c. Examine power cylinder and make certain that piston does not bottom in cylinder. Lubricate piston type power cylinder.

d. Check vacuum and operation of all valves.

e. Check timing of relay valves for synchronization between tractor and trailer brakes.

f. When vacuum is used in conjunction with hydraulic system, check line pressure; when used in conjunction with mechanical system, examine lever setting for maximum efficiency and measure effective force of power cylinder.

Air Brakes

1. Minor

a. Check entire system for leaks.

b. Examine pipes or hoses for kinks or wear. Check trailer hose and connection if present.

c. Drain all reservoir tanks and in cold weather install approved anti-freeze in tanks or examine and fill alcoholizer if present.

d. Check compressor; check governor for cut-in and cut-out range. Adjust if necessary.

e. Check braking effort between axles and between wheels of the same axle. If not correct, apply major inspection, performing Steps "f" to "i."

2. Major

f. Check air pressure required for one inch diaphragm rod movement of each wheel. If pressure varies disassemble brake chambers, examine diaphragm, and install correct springs.

g. Adjust slack adjusters or cam levers to correct angles.

h. Check relay valves for synchronization between front and rear axle and between tractor and trailer brakes.

i. Adjust brakes and again check braking effort.

Electric Brakes

1. Minor

a. Examine all wiring and connections on tractor and trailer.

b. Check amperage for each brake.

c. Check timing and braking effort between trailer and tractor, adjusting foot controller if necessary.

d. Examine safety break-away chain and safety switch. Check emergency battery.

e. Check braking effort between wheels on trailer axle. If necessary to make further examination or adjustments perform Steps "f" to "i."

2. Major

f. Remove wheels and examine magnet connections and face, bronze support bearings and lugs.

g. Examine armature, spring tension, and support bolts.

h. Adjust armature depression.

i. Adjust brakes and again check braking effort.

Grey-Rock Adopts Schedule, Offers Copy to Fleetmen

The United States Asbestos Division, Manheim, Pa., has adopted the new brake servicing schedule of the National Safety Council as standard procedure and has made copies of the schedule available free to all fleet owners in the form of a convenient wall plaque, according to an announcement by Franklin A. Miller, Grey-Rock replacement sales manager. Copies may be obtained from any Grey-Rock jobber, or by writing the company at Manheim, Pa.

Tire & Rim Year Book

The 1941 Year Book published by The Tire & Rim Association, Inc., 305 Peoples Bank Bldg., Akron, Ohio, is now ready for distribution at \$2 per copy.

**THOSE WHO
KNOW
POWER
BRAKES**

Choose
MIDLAND

**Complete KITS available in
both AIR and VACUUM for Ford, Dodge,
Chevrolet, G. M. C. and International**

"CONTAIN EVERY NUT, BOLT AND SCREW NEEDED!"

AIR BRAKES:



AIR: Showing the 7.3 C. F. Compressor, fully compensating foot control valve and diaphragm chamber contained in Midland Air Brake Kits

VACUUM BRAKES:



VACUUM: This reaction type control valve, check valve and cylinder are a part of Midland Vacuum Brake Kits

Both types are backed by Midland's famous "Factory Rebuild Exchange Plan" that assures long-range economy. Sold and serviced by a nation-wide network of Midland Distributors. Write today for complete information and prices.

THE MIDLAND STEEL PRODUCTS CO.
10605 Madison Avenue • • • Cleveland, Ohio
Export Department—38 Pearl Street • New York City

MIDLAND
(CHRISTENSEN)
Power Brakes



Thompson Products

Announces for 1941



The World's Finest
Break-In Motor Oil



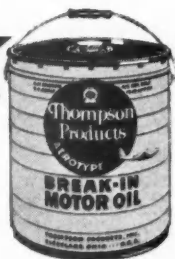
A Great New Repair &
Tune-Up Manual



A Factory-Processed Con
Rod Exchange Service



A Revolutionary
New Wheel-Aligner



Approximately 40% of all
new and rebuilt automobile
engines score and scuff dur-
ing the initial running period!

● Protect YOUR good work-
manship and the parts you in-
stall by filling the crankcase
with this remarkable, scientifically compounded
break-in oil, made expressly for Thompson Prod-
ucts. Actually *sticks to the hot spots and clings to super-
finish surfaces*—exactly the opposite characteristics
of straight lubricating oils. Non-corrosive and a
natural inhibitor of engine rust, gums, carbon, lac-
quers and sludge. Polishes all bearing surfaces.
Does not boil off. Not an "adder"—you fill the
crankcase to the regular capacity.

A BIGGER, GREATER Thompson REPAIR & TUNE-UP MANUAL FOR 1941

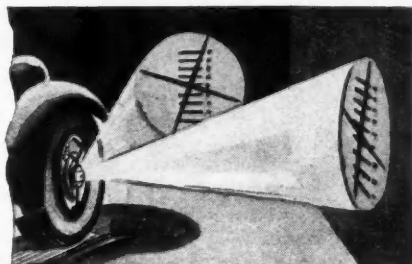


Everything you've had in the old 1939 and '40 issues,
with 425 NEW pages of valuable information that
YOU wanted. Covers cars from 1935 to 1940—also
trucks, tractors, buses, Diesels, and other heavy-duty
units. With it you get 18 8-page supplements cover-
ing 1941 car models and latest heavy-duty informa-
tion. Includes for the first time FLAT RATE CHARTS
on engine and chassis jobs—and a REPLACEMENT
PARTS CATALOG AND PRICE LIST. 9 POUNDS
—6,000 ILLUSTRATIONS! "Service Bible of the
Automotive Repair Trades"—indispensable in every
up-to-date automotive maintenance shop!

The Thompson MAGNALIGNER

Revolutionary LIGHT-BEAM
METHOD for WHEEL ALIGNING

Uses powerful light beams for checking camber, caster, toe-in,
king pin inclination, turning radius, tracking, etc. New SPEED,
VISIBILITY, ACCURACY and SHOWMANSHIP! All errors
greatly MAGNIFIED on durable screens. Your customer can clearly
see "Before" and "After" conditions. Developed at the chassis
parts plant of Thompson Products, Detroit, by chassis engineers.
THE GREATEST IMPROVEMENT IN WHEEL ALIGNING
EQUIPMENT IN 25 YEARS!



ASK YOUR THOMPSON PRODUCTS JOBBER FOR MORE DETAILS!



Thompson FACTORY-PROCESSED CON ROD EXCHANGE SERVICE

Now, along with "The Equipment Bearing Line," Thompson Products offers a
complete con rod exchange service. Thompson Factory-Processed Con Rods match
in every way the precision and quality of Thompson Engine Bearings. Modern
centrifugal casting of the con rod bearing metal gives an extremely dense, uniform
bearing grain structure which means more miles of service.

THOMPSON PRODUCTS, INC.
Cleveland • Detroit • Los Angeles



See Your Thompson Products Jobber . . .

Thompson Products

DESIGN FOR DUALS

(CONTINUED FROM PAGE 34)

above the frame channels. It extends full width of the truck. Through this tubular axle are welded two pieces of seamless steel tubing (dimensions $3\frac{1}{2}$ O.D., $\frac{1}{2}$ -in. wall, 24 in. long) which extend vertically downward on the outside of the frame channels. These vertical tubes form the guides for the steering shafts which telescope into the tubes

through two large bronze bushings pressed into the tubes. The steering shafts (nickel steel 36 in. long, $2\frac{1}{2}$ in. diam.) extend completely through the guides and bear on a series of nested coil springs attached to the top of the axle. These coil springs are of special design and permit a total deflection of 10 in. and a progressive load range of 30,000 lb. before collapse. They provide good riding quality by automatically adjusting the spring rate to whatever load is imposed upon them.

The lower end of each steering shaft is pressed into the center of a stub axle which in turn carries a spindle on each side. The wheel hubs are mounted on these spindles and carry standard front wheel brake drums and brakes. Steering arms are attached to the center of these stub axles and extend forward from between the wheels to be connected together by a tie rod. A standard Ross steering gear is mounted rigidly to the frame just ahead of the left set of front wheels and is connected to the wheels through a steering rod running to the steering arm on the other side.

According to Mr. Garnett, one of the early models had a little trouble with uneven tire wear, which was found to be caused by lack of rigidity in the vertical tubes. Heavier construction overcame this trouble. Subsequent construction made it possible to get 50 per cent more wear from front tires than rears carrying exactly the same weight.

It occurred to the editors of COMMERCIAL CAR JOURNAL that this construction might be particularly susceptible to damage as a result of striking curbs or other obstructions, since the blow in effect is applied at the end of a long lever. Mr. Garnett when queried on this point, replied that not only had there been no trouble from this source, but that this construction had weathered accidents in better shape than conventional construction would have. If readers have any questions of their own on this type of construction, COMMERCIAL CAR JOURNAL will be glad to have them answered by Mr. Garnett.



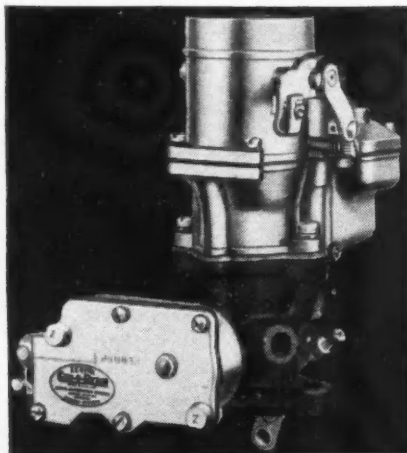
Double Action

with a single purpose in the new

ZENITH

GOV·U·RETOR

... to save you money!



SEPARATE carburetors and governors were good enough until something better came along. But now they've given way to a new and better governed carburetion—the highly successful new Zenith Gov-U-Retor.

Now speed control is engineered right into the famous Zenith Carburetor mechanism. The result is a compact, perfectly matched and balanced unit that saves money for truck and bus operators in these important ways:

Provides more efficient flow of fuel; checks cheating by throttle manipulation; reduces surging; provides more constant speeds on grades and hills; eliminates costly replacements required by two unmatched units. Downdraft and updraft types to fit most popular engines. For complete information—

Write!

ZENITH CARBURETOR DIVISION
BENDIX AVIATION CORPORATION
696 HART AVENUE DETROIT, MICHIGAN



"Speeding merrily along, the little blue sedan, driven by the attractive blonde, Miss Henshaw, swept over the hill at an alarming rate . . . say, what the hell kind of an accident report is this, O'Drool!"



WEED American

BAR-REINFORCEMENTS

**... more than
DOUBLE
your
Chain Mileage**

● Yes, those double-welded Bar-Reinforcements not only prevent forward, back and side skids but they also provide twice the metal to wear through. Moreover, that metal is tough, wear-resisting "Weedalloy," especially developed for WEED Tire Chains. That means still more mileage.

Thus WEED American Bar-Reinforced Tire Chains give you greater safety—more than double mileage. That's why they are known as "The Best Buy in Tire Chains."

Standardize on WEED Americans and cut your chain costs.

**AMERICAN CHAIN & CABLE
COMPANY, Inc.**

YORK, PA.



In Business for Your Safety

SEND FOR FREE CHART
25% to 50% can be added to chain mileage by proper installation. Send for free chart that shows how to apply chains so that all cross chains get equal wear.

WEED

**WEED American
Bar-Reinforced
TIRE CHAINS**

"SINGING WHEELS"

(CONTINUED FROM PAGE 37)

Things to eat and things to wear.
Things you want for work and play.

Modern America won't wait—you
want these things today!

Roll 'em trucker—keep rollin' along.

Roll 'em trucker—to a rolling song—

Milk for the babies

Silk for the ladies.

Fuel for the furnace, steel for the mill.

Beans and potatoes, corn and toma-
toes

Roll 'em trucker—keep rollin' along.

Upon the unfailing service of sing-
ing wheels is built the highest stand-
ard of living ever seen by the human
race. Even in the large cities served
by steel rails and waterways, trucks
form the final, most important link
in the vital distribution of goods and
commodities.

And, more than 48,000 towns,
cities and villages in this country are

totally dependent upon trucks for all
the necessities of life.

Because the trucks keep rolling, we
are inclined to take them for granted
—forget the service they give.

But, just suppose that for some
malevolent reason, in your commu-
nity the trucks stopped rolling. Sup-
pose in every city, town and village—
all across the nation—suppose every
truck stopped. The result: Chaos.

The trucks won't stop. America
isn't going to stop. All day and all
night the trucks are rolling. Here they
come.

How many people are four million
people? Perhaps you can visualize
a hundred thousand people at a foot-
ball game or some other great as-
sembly—but four million . . . ! Try
to imagine an army greater than the
entire population of the city of Chi-
cago. If you can, you'll have some
appreciation of the number of wage
earners who make their living keep-
ing the wheels turning. These—with
their families—equal more than the
combined population of Chicago and
New York.

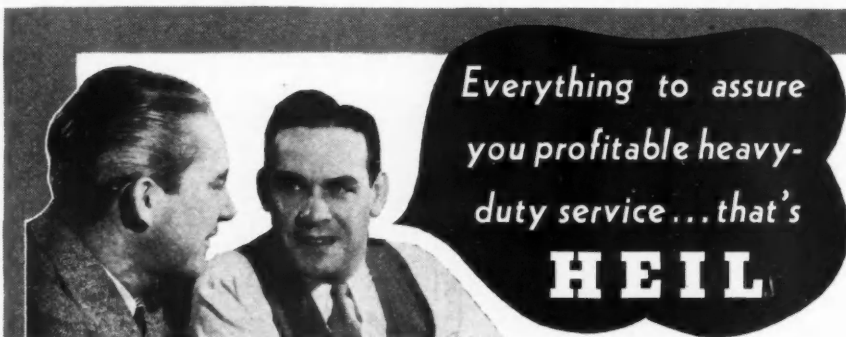
One out of every ten pay checks
issued in the United States goes to
a worker in the motor truck and
allied industries—to maintain their
families.

To make and maintain the trucks,
every state contributes its treasures
of raw materials. From the agricul-
tural regions, corn and cotton, flax
and soy beans. From the forests,
lumber, turpentine and resins. From
the ranges, hides and wool. From the
mines, iron, copper, zinc, lead, alumi-
num, nickel, coal and a score of
others. Every trade, every craft, every
profession is represented in the gi-
gantic enterprise of putting America
on wheels—and keeping them rolling.

Four and a half million trucks to
serve America. Who owns them?
Who operates them? One fourth of all
motor trucks in the United States are
on farms. They lighten man's labor
in the fields and speed his produce
to the market. And, because the
farmer has motor power to speed his
products to market, you and I live
better, at lower cost, than any other
people anywhere.

Among the large truck users are
the American railroads with huge
fleets to supplement their rail lines.
Because of trucks, freight is collected
and assembled at shipping points and

(TURN TO PAGE 82, PLEASE)



COMPLETE LINE OF HOISTS, BODIES AND TANKS . . . NATION-WIDE SERVICE



Powerful Heil Hydraulic Pump Units
are made in all types and capacities
for all kinds of service.



Heil Trailerized Transportation Tanks
carry bigger payloads at lower costs
— Send for free Tank Catalog.

There are two big reasons why
successful fleet operators every-
where look to Heil for the right
hydraulic dump units and trans-
portation tanks to give them long-
time, profitable service:

1. The Heil Co. offers a *complete*
line correctly engineered to meet
every requirement of heavy-duty
service.
2. The Heil Co. is a substantial or-
ganization that gives you quality
you can depend on—a house that
accepts full, undivided responsi-
bility for its claims, and is *always*
nearby to do so.

Let the years of experience and
research behind the Heil Quality
trademark be your guarantee of
satisfaction. Get Heil recom-
mendations on your next equip-
ment order. . . . Write today
for free Heil Equipment manual.

BH-49

If you are not receiving the "Heil Quality News," send
us your name so we can mail you free copies regularly.

MILWAUKEE,
WISCONSIN

THE HEIL CO.

HILLSIDE,
NEW JERSEY

Hoists — Bodies — Road
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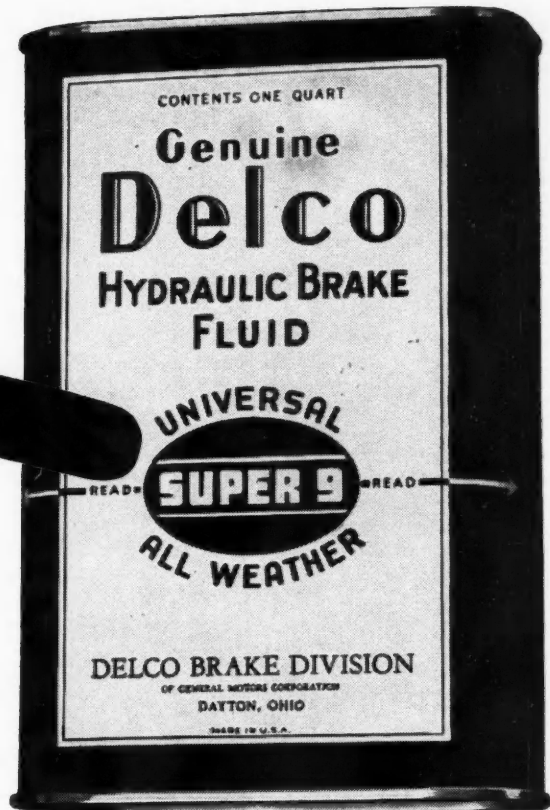
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COMMERCIAL CAR JOURNAL
JANUARY, 1941

**Why Fleet Operators
are Standardizing on—**



DELCO SUPER 9 HYDRAULIC BRAKE FLUID



Growing numbers of leading fleet operators are standardizing on one hydraulic brake fluid—Delco Super 9. All have chosen it because it cuts down maintenance costs—but, specifically, many have chosen it because it protects against vapor-lock when brakes heat up—others, because it is safe from dangerous thickening in cold weather. Still more have found that Delco Super 9 means longer rubber life in the hydraulic system—less cost per mile.

Each of these is a valid, proved-in-the-field reason. But better still is the *combination* of reasons revealed in recent comparative laboratory tests of nine different types or groups of brake fluids now on the market. As the chart at the right shows, Delco Super 9 is a leader in the eight important characteristics by which the over-all desirability of hydraulic brake fluid is measured. Use the brake fluid that leads in *all* the factors that make for safety and real economy. Standardize on Delco Super 9.



Delco Super 9, Declene and Delco Brake replacement parts are distributed by United Motors Service and Bendix distributors.



Before Refilling with Delco Super 9...

Flush out questionable, broken-down brake fluid, gum deposits and dirt with Declene flushing fluid. Your fleet operations will be safer with a clean hydraulic brake system and a superior brake fluid.

FLUID	RATING IN RESPECT TO:							
	HEAT	STABILITY	COLD	LUBRICATION	RUBBER	MISCIBILITY	METALS	EVAPORATION
DELCO SUPER 9	A	A	A	B	A	A	B plus	B plus
TYPE 2	B	C plus	B	B	C	B plus	B plus	B
TYPE 3	C	D plus	E plus	B plus	C	B	B plus	B
TYPE 4	E	C plus	D	B	B plus	B	B	D
TYPE 5	A	C plus	D plus	B	D	B	D plus	B plus
TYPE 6	E	D	D	D	B plus	E plus	E plus	E
TYPE 7	A	C plus	D plus	B	B plus	B plus	B	B plus
TYPE 8	E	C plus	D plus	B	B plus	B	B	E plus
TYPE 9	A	C plus	D plus	B	B	B	C plus	B plus

KEY: A—Excellent. B—Good. C—Fair. D—Poor. E—Extremely Unsafe

This chart is based on laboratory tests of nine types of brake fluid now on the market. Delco Super 9 is safe and effective from 50° below zero to 300° above, mixes readily with other fluids, meets all other requirements, and is competitively priced.

Delco

BRAKE DIVISION

GENERAL MOTORS CORPORATION, DAYTON, OHIO

STANDARD FOR EQUIPMENT—THE STANDARD FOR REPLACEMENT

(CONTINUED FROM PAGE 80)
merchandise that would otherwise be congested in the terminals . . . is quickly distributed. Better service — at less cost.

Now we can look at these singing wheels through new eyes, and understand them better. Singing wheels — better service — better living — at lower cost to everybody.

They clean our streets . . . deliver our parcels . . . speed the mail . . . transport our children to school . . . protect the trees of our boulevards.

Trucks carry the load in every step of the interesting metamorphosis from trees . . . to mile-long rolls of newsprint ready to feed to the presses . . . and the news of the day, delivered to the newsstand, or your own door.

Some of them live a life of thrills and excitement—protecting property . . . adding speed and power to the long arm of law enforcement . . . bringing swift relief in time of emergency in our complex modern civilization.

Some spend their lives in back

alleys, patient drudges, without glamour, but very necessary.

On great construction projects, brawny giants move with ponderous, powerful dignity; carrying tremendous loads easily and dependently—helping to build huge bridges and dams—bringing life to once barren waste . . . laying the foundation for some towering metropolitan skyscraper—or a modest cottage.

Our modern civilization depends upon the great network of highways—lacing America into one great community. And, trucks built the highways—the smooth ribbons of concrete, the super-express motorways—and the rural by-ways—bringing once-distant horizons within easy reach—making neighbors of cities and towns and villages once widely separated. For the flow of commodities must go on—the life blood of national life must not stop.

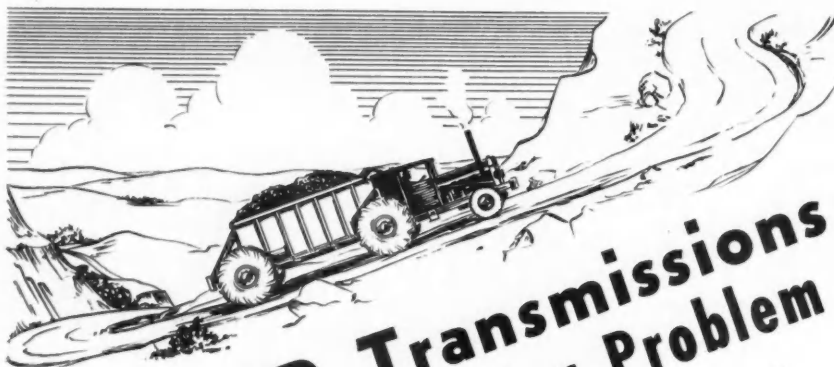
Highways for everybody's use. For the traveling salesman, for the farmer, for the vacation tourist—for the casual Sunday driver. A vast network of travel arteries for everybody's use—for everybody's profit . . . built and maintained by trucks.

Summer and winter . . . these arteries must remain open. For they carry the life blood of America. The wheels must roll—goods and commodities must go through. So, again the trucks go to work, clearing the highways.

And, traffic goes through. Traffic? Well, it's something more than that. It's food and clothing—goods and commodities—business—education. For all of us share in the benefits of this mobile civilization. In building our great highways, in maintaining them and keeping them open the year around, trucks bear the burden. And, in paying the cost of our vast arterial system, trucks also bear the burden—far more than their share.

A recent report to Congress by Honorable Joseph B. Eastman, former United States Coordinator of Transportation, now chairman of the Interstate Commerce Commission, proved that during the period from 1921 to 1937, motor vehicles as a whole, including trucks, have more than paid their full share of all highway and street costs. This report showed that the average passenger car paid \$26.00 . . . annually in highway use taxes.

(TURN TO PAGE 84, PLEASE)

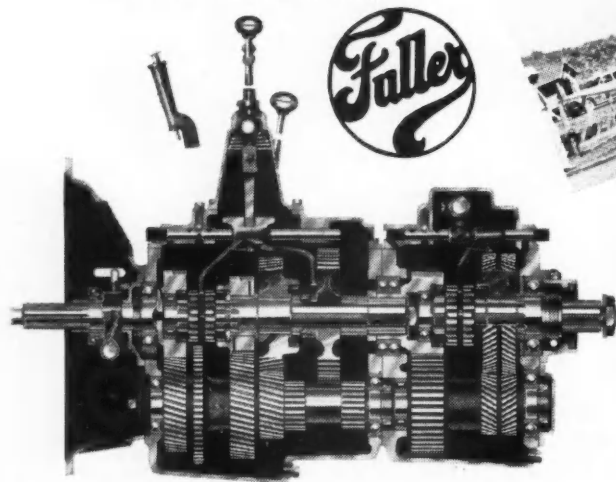


FULLER Transmissions Solved This Hauling Problem

Loaded, this Euclid Ore Hauler weighs over 116,000 lb. and operates on 8 to 10% grades in the Minnesota iron mines. In this tough service, the FULLER Model 8B860 Transmission with Hydraulic Coupling supplies the required durability and ease of operation, coupled with a wide range of closely spaced gear ratios.

For "more payload per dollar," it pays to specify FULLER'S.

FULLER MFG. CO.
Kalamazoo, Michigan



FULLER 8-Speed Transmissions

Four series, eight models, each providing 8 speeds forward and 2 reverse. Choice of overdrive or direct in high.



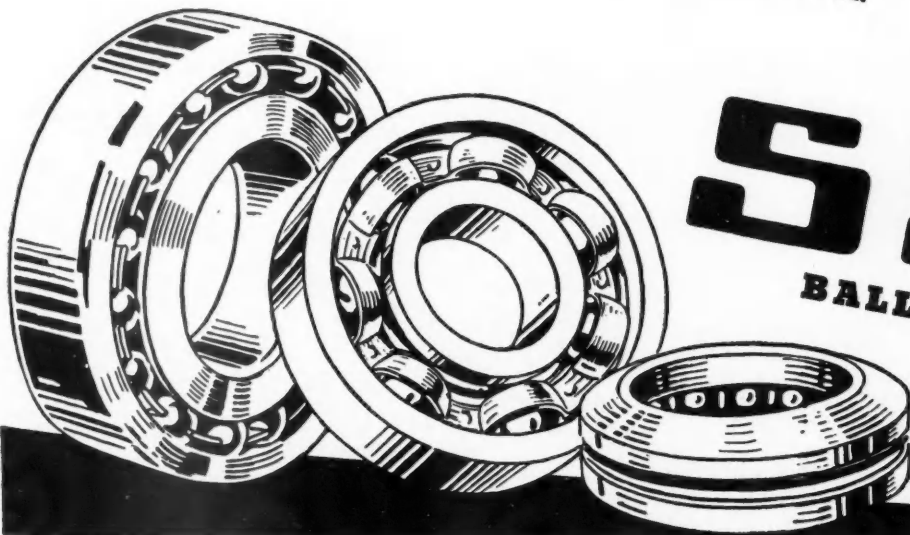
ARE Bearings THE Bottle-necks IN YOUR FLEET COSTS

When your fleet superintendent computes his costs, there's usually one item that sticks out like a sore thumb. That item is "bearing replacements", and here's what he does about it:

He phones the nearest of 750 SKF Distributors the make of your trucks and buses . . . and the locations where bearings are bottling up your profits. And this SKF Distributor proves to him that "specifying SKF" is the quickest way to break the bottle-neck of HIGH time and labor costs. Write us *today* for our new bulletin, "Ball Bearing Replacement Data—1940 Trucks and Buses."

4680

SKF INDUSTRIES, INC., PHILADELPHIA, PENNA.



SKF

BALL BEARINGS

(CONTINUED FROM PAGE 82)

The average light truck for hire paid \$105.00.

The average medium truck for hire paid \$282.00.

The average heavy truck for hire paid \$403.00.

The average heavy truck with trailer paid \$832.00.

Trucks pay 27 per cent of all motor vehicle taxes. Let's look at it another way. From other statistics we see that motor trucks represent only about 14 per cent of the total regis-

tration of highway users. Yet . . . today, trucks are paying 350 million dollars annually in registration fees, fuel and other taxes for the use of the highways. A sum equivalent to ALL the maintenance costs of all our state highways all over the nation—enough to pay for all the repairing of our vast arteries of travel from coast to coast—from Canada to Mexico in the state highway systems. AND, in addition . . .

. . . pay more than one-fifth the total expense of construction of new

roads and bridges and the reconstruction of all roads in our state highway systems. Besides all this—and exclusive of their income and social security taxes—trucks now contribute each year upward of 200 million dollars to the general expense of government.

Proudly they roll along—and rightly so. They pay their way—and more. They comply with all the stringent local, state and national regulations. They do their job—and well. And, just as these singing wheels may be depended upon to make possible for every one of us a better life . . .

. . . so may they be depended upon to provide the lightning mobility of defense for our national life.

In the troubled world of today our thoughts turn to national defense. In tune with these swift-moving times, combat officers are reorganizing our Army—streamlining its effectiveness. . . . trying out new techniques. Because, in an emergency—time—and mobility are just as vital to defense as striking power.

The old system of forced marches of foot troops is now as obsolete as the old-fashioned musket. The Infantry that spends its energy plodding down the road has little left for fighting.

Picturesque cavalry with all its jiggling equipment is thrilling to see—but not nearly fast enough to keep pace with modern tactics.

Today, in a fraction of the time that once was required to get the old style divisions started . . .

. . . the new triangular divisions are moving . . . under way. And whatever their objective . . . however far away . . . they'll arrive in full strength. With this new motorized efficiency, the trucks bear all the burdens—carrying supplies, weapons, artillery and men . . . 50, 100, 200, 300 miles per day instead of the old-fashioned 15.

In the motorized Army—everybody—everything . . . rides, and these great carriers have unlimited cross-country ability. They service all our national defense needs—our navy—our army—and aircraft bases. They can go anywhere any time to meet the nightmare speed of modern war on wheels. Call it lightning war—call it anything you choose—it is

(TURN TO PAGE 86, PLEASE)



Thanks to the extra smoothness and durability of Link-Belt Roller Bearings!



THE PERFECT
REPLACEMENT
FOR
FRONT WHEELS
DIFFERENTIALS
AND REAR AXLES

Yes, sir! You can spread a lot of sunshine on your mileage cost records by replacing the worn bearings in your trucks and buses with Link-Belt roller bearings. You'll find that these better bearings will not only improve performance, but they'll stand up far longer, even in the toughest service. The reason is the exclusive convex-concave roller principle on which these bearings are built. Ask your jobber to explain this to you—you'll see at a glance that it's a great advancement in bearing construction. Use Link-Belt roller bearings in your next job!

LINK-BELT COMPANY

519 N. Holmes Ave., Indianapolis, Indiana
Warehouses in all principal trading centers

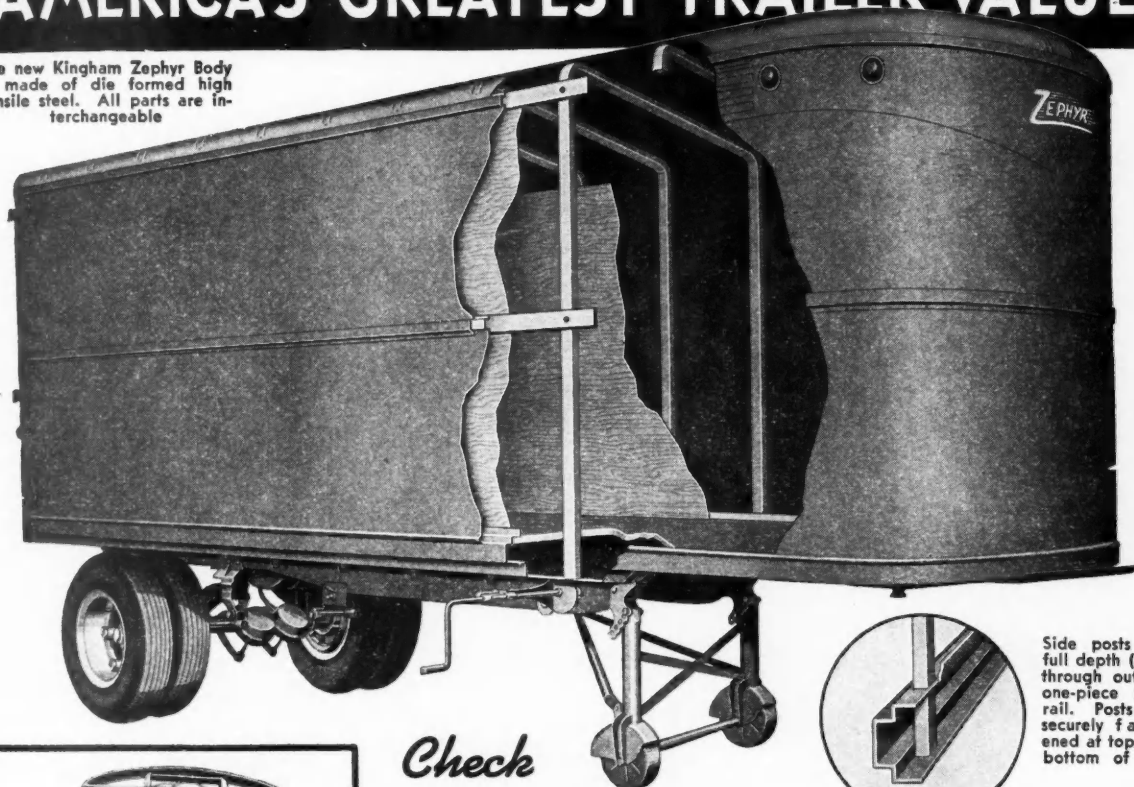
Made by the makers of the famous
Silverstreak Silent Timing Chain!

LINK-BELT SHAFTER ROLLER BEARINGS

The KINGHAM ZEPHYR STREAMLINED

AMERICA'S GREATEST TRAILER VALUE

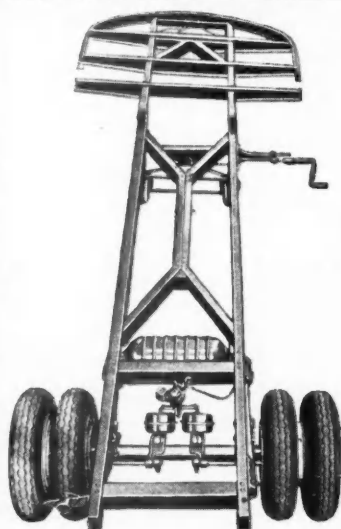
The new Kingham Zephyr Body is made of die formed high tensile steel. All parts are interchangeable



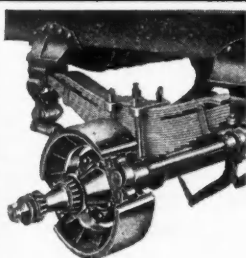
Side posts run full depth (10") through outside one-piece rub rail. Posts are securely fastened at top and bottom of rail

Check These Features

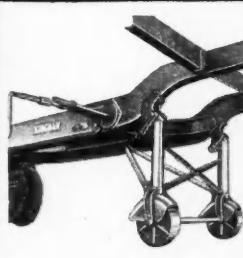
- Side and roof panels easily removed from outside
- Boxed section Hi-tensile steel posts give added strength
- Triple strength all-steel re-inforced center rub rails
- Lower rub rail made of Hi-tensile steel—formed in one piece to effect minimum weight and maximum strength
- Ship-lapped hardwood floor
- Three-ply veneer lining



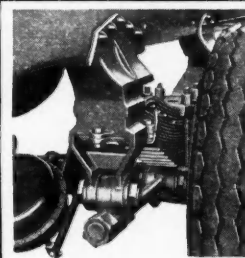
New Kingham X-Braced Frame—Light Weight



New Kingham Suspension Assembly with Mountain Type Brake



New Kingham Streamline Supports with Compound Gears



New Kingham Rubber Mounted Radius Rod and Spring Features

KINGHAM TRAILER COMPANY

INCORPORATED

LOUISVILLE, - - - KENTUCKY

(CONTINUED FROM PAGE 84)
really nothing more than efficient transportation; a science in which we are already expert.

With half the trucks of all the world right here in the United States—and the experience of building and operating them efficiently, we can be confident that if we must motorize and mechanize our defensive power, no nation in all the world is our equal.

I want you to meet a good American—a gentleman of the highway—a

man who knows his job and does it proudly and well—a representative of hundreds of thousands of expert truck drivers throughout the nation who have been especially qualified and trained for their vital job.

With the best equipment in the world—our quick deliveries in peace or war depend on the health and trained intelligence of men like these drivers. So, every driver trained as these men have been . . .

. . . has had to pass a physical examination as rigid as the medical

examination given for life insurance.

Mentally and physically—he must be qualified to meet the exacting standards of this new industry.

Proof of his continued fitness must be on file at all times at his headquarters. More than that—he must know all the safety regulations.

There's your modern knight of the road. Proud of his job—with a record of which he may well be proud. Sometimes misunderstood—sometimes abused—by you and me, he carries on—pilot of the singing wheels—keeping them rolling—serving a greater America.

"Roll 'em trucker . . . keep rollin' along.

Roll 'em trucker . . . to a rolling song.

Milk for the babies

Silk for the ladies.

Fuel for the furnace . . . steel for the mill.

Beans and potatoes . . . Corn and tomatoes.

Roll 'em trucker . . . keep rollin' along."

4-Wheel Drive for 6-Wheelers *when, as and if you need it*



About ten per cent of the running time of a six-wheel truck it requires more traction than is provided by the truck's own driving wheels. At such times—and only at such times—is four-wheel drive an asset. Therefore, for true economy, the ideal four-wheel drive would be quickly applicable when needed and easily detachable when not needed.

This type of four-wheel drive is available with Trucktor Third Axles. The Trucktor patented Detachable Chain and Sprocket Four-Wheel Drive is quickly and easily put on and taken off. It is a real asset especially in winter driving.

THE TRUCKTOR CORPORATION
156 Wilson Avenue Newark, N. J.

Trucktor

When writing to advertisers please mention Commercial Car Journal

BOOK REVIEW

It is not very often that COMMERCIAL CAR JOURNAL gets enthusiastic about books on technical subjects for the mechanic. The reason for this is that very seldom does a textbook come along that COMMERCIAL CAR JOURNAL can conscientiously recommend to a mechanic as a means of increasing his working knowledge on a subject pertinent to fleet operation.

An exception is at hand. A. H. Packer's "Electrical Trouble Shooting on the Motor Car" does an excellent job of taking a beginner by the hand, showing him what he is in for when he attempts ignition work and then proceeds, chapter at a time, to get him out of the electrical maze that the vehicle designer has created.

Perhaps the use of the word beginner will lead to a false impression. While it is possible to begin at the beginning with this book, there is no lack of value for the practical mechanic who would like to know more about automotive electricity. Although the book is thorough going, it is not a service manual on all types of electrical units.

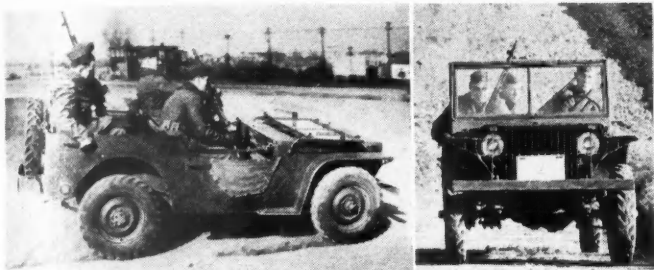
The book has 58 chapters, 576 pages and 350 illustrations. It is for sale by A. H. Packer at 8130 Harper Ave., Chicago, Ill. The price is \$4.

QUIZ ANSWERS

(See page 20)

- | | |
|-------|--------|
| 1. c. | 6. a. |
| 2. a. | 7. a. |
| 3. a. | 8. b. |
| 4. b. | 9. b. |
| 5. c. | 10. c. |

COMMERCIAL CAR JOURNAL
JANUARY, 1941



Two views of the new Ford "Pigmy" trucks for the army. Officially designated, "Command-reconnaissance 4-4's," they are expected to replace motorcycles and side cars in the new mechanized divisions. Mechanical highspots include a 42 hp. four-cylinder engine, four-wheel-drive with provision to use front axle as idler, six speeds forward and a top speed close to 60 m.p.h.

Valvoline Analysis Service

As an important step to enable fleet users to get most efficient use from engine lubricants, the Valvoline Oil Co., Cincinnati, is offering a complete laboratory analysis service without charge to all Valvoline fleet users with an annual purchasing potential of 10 drums or more.

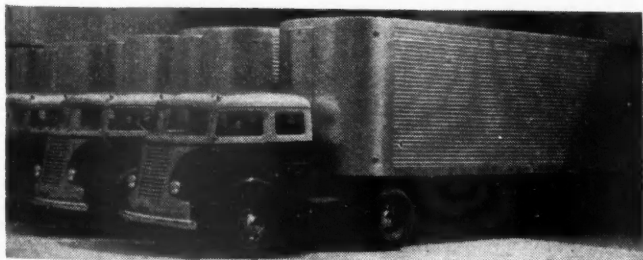
Valvoline users are invited to send samples of their crankcase draining to the Valvoline laboratories at periodic intervals. The samples are tested for gravity, flash, fire, viscosity, Conradson carbon, ash, precipitation, dilution, kissing resins, and water content. A report of the findings is then addressed to the user containing recommendations with respect to the drain period, operating temperature, condition of filter and any irregularities which may be apparent in the findings.

A booklet describing the plan has been prepared by L. A. Calkins, Valvoline's chief engineer, and is available to qualifying fleets without obligation. There is also a wall chart designed to provide a complete operating record, with respect to engine lubricant for each truck in the fleet.

N. Y. Fleet Safety Record

Sixteen thousand trucks, driven by 25,000 drivers, in the New York metropolitan area, are entered in the year-round safety contest sponsored by the Greater New York Safety Council. During the first nine months of 1940, city members have bettered their record for the same period of 1939 by 20 per cent (24,563 miles per accident compared with 20,411), while suburban members have improved 40 per cent (49,373 miles per accident compared with 35,260). The national average for all vehicles is up 6 per cent.

Meanwhile, Postmaster Albert Goldman of New York City at a recent meeting sponsored by the council made 204 awards to mail truck drivers who had passed their seven-year mark without an accident and 75 awards to first-year men without an accident. Five hundred and seventeen additional awards were made later to drivers qualifying for intermediate recognition.



Atlantic Food Supply Co., Orlando, Fla., hauls fruits and vegetables north, and canned goods south, so it is doubly important to have modern equipment. A fleet of 17 new Diamond-T tractors, hitched to Great Dane frameless trailers made of hi-tensile steel and insulated with Reynolds metallation to reflect heat and retain cold, provide the answer. The 26-ft. trailers weigh 6400 lb.



Why it pays to concentrate on Whiz

Ninety-eight automotive beauty and maintenance products. . . .

All identified by the trade name "WHIZ." . . . All produced by the world's oldest and largest manufacturers of automotive chemicals.

The WHIZ line is complete . . . attractive . . . of known quality and dependability. The satisfaction you will experience with each fine product is an extra reason why you should use the others.

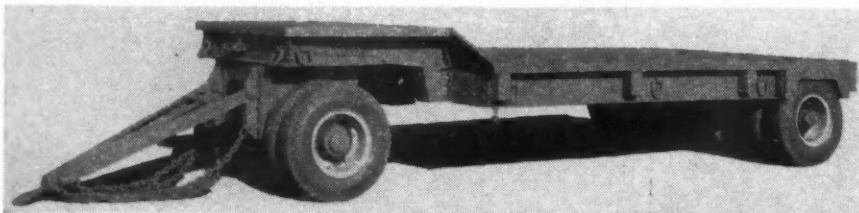


Concentrate your buying. Let the name WHIZ be your guide to lower fleet maintenance costs.

CAR BEAUTY and MAINTENANCE PRODUCTS

POLISHES • CLEANERS • TOP DRESSINGS • TIRE COATINGS
RADIATOR SPECIALTIES • BRAKE FLUIDS • ENAMELS
SHOCK ABSORBER FLUIDS • GASKET CEMENTS • SOAPS
ABRASIVE COMPOUNDS • SPECIALIZED LUBRICANTS

R. M. Hollingshead Corp., Camden, N. J.
WORLD'S OLDEST AND LARGEST MANUFACTURERS OF AUTOMOTIVE CHEMICALS



The U. S. Army Engineer Corps has ordered 51 of these 16-ton La Cross Trailers designed for heavy hauling over rough terrain. Note extra wheels in rear

Illinois Truck Law Uphold

The Illinois Truck Regulatory Act of 1939 has been held valid in the Sangamon County Circuit Court with the exception

of that part which held that the Department of Public Works and Buildings must give certificate to any trucker upon affidavits of 25 shippers.

WEAVER Heavy Duty WHEEL DOLLY



\$60⁰⁰★

**SPEEDS SERVICE WORK ON BRAKES,
BEARINGS, TIRES, INSPECTIONS**

Prevents Serious Injuries

The Heavy Duty Wheel Dolly lifts wheels off the floor, as shown above, and is used to remove the wheel from the spindle and to transport them anywhere in the shop. Screw jack raises wheels to exact height to replace on spindle. Equipped with chain for holding wheels securely in a vertical position. One mechanic does the job without lifting a pound. See your jobber or write direct for complete information.

**Slightly more on West Coast.*

WEAVER MANUFACTURING CO.

SPRINGFIELD, ILLINOIS, U. S. A.

Chatham, Ontario, Canada

London, England

WEAVER

FIGURING THE LOAD FACTOR

(CONTINUED FROM PAGE 25)

all the ramifications of an irregular operation or may be applied to the simple operation first illustrated and may be summarized by round trips, daily or monthly and for various operating divisions if there is more than one.

It is instructive to point out that had the element of distance been eliminated from the calculation in this example an erroneous result would have been obtained, thus:

Route	Load Tons	Capacity Tons	Load Factor
A to B	20	20	100.0%
B to C	12	20	60.0%
C to D	0	20	0
D to A	9	20	45.0%
	41	80	51.2%

It is therefore apparent that a truck carrier desirous of producing accurate Load Factor information must maintain a record of Net Ton-Miles and Gross Ton-Miles.

The effect of Load Factor on cost and the means of accurately determining Load Factor have been pointed out and we may now consider the conditions which influence Load Factor and the steps which may be taken to maintain it at a high level.

The general level of Load Factor in the state of California, and no doubt in other areas, is very positively influenced by the ratio of the supply or availability of motor trucks to the general demand for tonnage space by shippers. When the ratio of supply to demand is high the general level of Load Factor is low; on the other hand when the ratio of supply to demand is low the general level of Load Factor is high. This statement applies more particularly to contract haulers not operating between fixed termini. Common carrier Load Factors are not influenced greatly by supply and demand and plant facility Load Factors not at all.

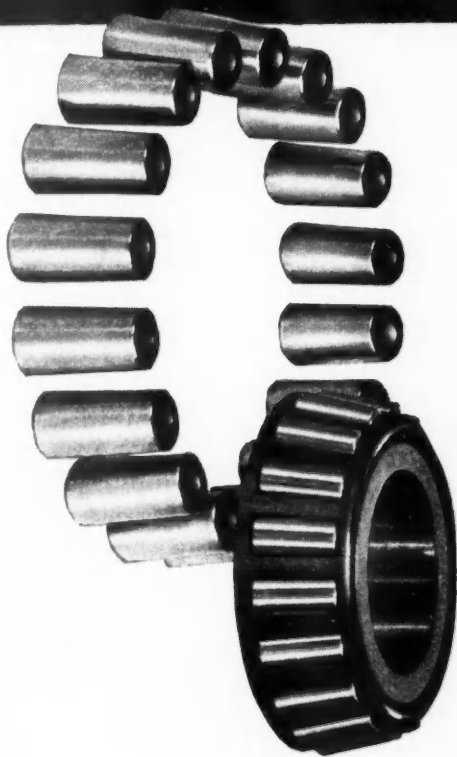
The trucker can have little influence over the condition of supply and demand—that is unless he decides to retire from the business. Legislation and regulatory commissions' orders may, however, exercise an important influence on supply and demand by restriction of the issuance of permits and certificates when it appears that supply exceeds or is likely to exceed demand.

(TURN TO PAGE 90, PLEASE)

COMMERCIAL CAR JOURNAL
JANUARY, 1941

When writing to advertisers please mention Commercial Car Journal

IT'S THE *Rolls* THAT CARRY THE LOAD



CONVENTIONAL CAGE-TYPE BEARING

The above picture shows the spacing of rolls if the cage were removed. Note that in this bearing (No. 565, for example) it is possible to provide only 18 load-carrying rolls.



TYSON CAGELESS BEARING

By eliminating the cage, Tyson provides 24 rolls in the same bearing. Same size, same part number, same price. Yet Tyson gives you one-third more load-carrying rolls.

● The rolls—and only the rolls—carry the bearing load. Tyson's additional rolls mean extra capacity. And longer life—*double* the mileage of cage-type bearings, on an average. On tough jobs, it will pay you to replace with Tyson Cageless.

Cageless FOR HARD SERVICE

Cage-type FOR REGULAR SERVICE

Tyson

TYSON ROLLER BEARING CORPORATION, MASSILLON, OHIO

(CONTINUED FROM PAGE 88)

Load Factor may also be influenced by proper dispatching. An alert dispatcher, supplied with sufficient tonnage and a thorough knowledge of the requirements and demands of the shippers; a dispatcher well informed of the capacities and capabilities of the equipment at his disposal, should be able to maintain a high level of Load Factor.

However, the truck business has grown, if not thrived, on the policy of rendering super service—in fact, express service at freight rates. To render such service as shippers have been educated to expect, frequently means that Load Factor considerations are thrown out the window. The freight must be moved at once even though it be but a partial load, whereas if it were held over but a few hours a truck load could be assembled and the Load Factor improved.

The shipper can, if he will, help to maintain a high load factor; and it is to his interest to do so. Higher load factors to the operator mean

lower costs and eventually lower rates. In addition to reducing his demands for expedited service the shipper can help the Load Factor situation by concentrating his business with one or at least a limited number of carriers. The greater reservoir of tonnage a carrier has available the better chance he has to dispatch intelligently.

AFTER HOURS

(CONTINUED FROM PAGE 21)

the motor trucks a better transportation tool; here are many enterprises with engineering departments and research laboratories that are constantly improving established products and constantly discovering and perfecting new things to go into motor trucks; here is all this brain, brawn and bullion exerting itself eagerly and ceaselessly to make motor trucks more efficient and thus, automatically, to increase constantly the motor truck's economical sphere of operation.

With such enterprise back of it and with the lifting of restrictive size and weight legislation (for which the railroads largely have been responsible), it is not beyond the realm of possibility that motor trucks could give the American public a highway service from coast to coast and border to border for which the public would be willing to pay a price that would be reasonable and economical, all things considered.

The industry's job will be to prove to the three-man board that the motor truck has not reached the end of its rope by showing what improvements have been effected in years past, and by giving it an insight into the many efficiency-improving opportunities which the truck of today presents. All of the enterprises enumerated above should delegate men to begin immediately the task of accumulating evidence to overwhelm the President's appointees, to preserve competition in transportation, and to insure for the motor truck an unlimited field in which to expand and to confer its benefits upon the nation.



K-D TRIFLEX-P REFLEX REFLECTOR

*with
plastic lens*



Model No. 333
40 times more effective than required.

APPROVED
This is K-D's Silver Anniversary

FIRST COST IS THE LAST COST

Just install and there's no further maintenance expense.

Reflexed illumination—retro-directive — which borrows light from the car behind.

Visible over 1/4 mile.
3-inch red or amber lens.

- Shatterproof
- Permanent
- Non-fading
- Tested

Members by invitation . . . Rice Leaders of the World Ass'n

The K-D LAMP Co.

CINCINNATI, OHIO

The "KING" UNIT TESTER

offers a lot for YOUR MONEY



The "KING" K-400 is a very popular number—it enables you to locate trouble quickly and accurately. You can attain higher efficiency from your cars and trucks with the aid of a "KING" Tester. It is a beautiful modernistic job, and no other tester will give you so much for the money. The "KING" K-400 Unit Tester has the following five units which may be purchased separately: (1) Motor and Ignition Tester; (2) Generator Voltage Regulator Tester; (3) All-electric Spark Plug Tester; (4) New oscillator type Condenser Tester; (5) Exhaust Gas Analyzer with vacuum and fuel pump test.

The "KING"
K-400-\$198.00

"KING" R.P.M. Indicator

\$42.50

Every repair shop should have a "KING" R-49 Electro-Tach (or R.P.M. Indicator) because it simplifies timing of the ignition, carburetor adjusting, testing engine balance, and also has many other uses. All meter wavering has been overcome by taking the more rapid impulses from the primary of coil or distributor instead of the spark plugs. It requires no balancing or disconnecting of wires. It will operate from a 6-volt battery.



Ask Your Jobber or Write Us Jobber's Name

The ELECTRIC HEAT CONTROL Co.
9127 INMAN AVE., CLEVELAND, OHIO

KING • Good Products Since 1914 • KING

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PREPARAKOTE AND DULUX

REG. U. S. PAT. OFF.

**The Primer
That FILLS *and*
The Finish
That LASTS!**

PREPARAKOTE is a ready-to-use, quick-drying primer with maximum adhesion qualities. It *fills*; can be sanded easily (dry sanded in four hours for color coats); holds firmly even on "hard to finish" jobs. Successive coats may be applied without "flashing" between coats. Saves you time and labor.

DULUX combines brilliant beauty with unusual durability. Highly resistant to chipping, traffic gases, greases, oils, weather. It saves time, cuts labor costs because it needs no rubbing or polishing, owing to its high initial lustre. You can do better jobs on all types of bodies *faster* with **DULUX**.

E. I. DU PONT DE NEMOURS & CO. (INC.)
REFINISH SALES • WILMINGTON, DELAWARE



REFINISHING MATERIALS

SHOWCASE OF NEW PRODUCTS

(Continued from Page 44)

Circo Vapor Cleaner

A new type differential and transmission cleaner has been developed by the Circo



Products Co., Cleveland, Ohio. Known as the Dee Tee Vapor Cleaner, the new unit employs a heat-vaporized solvent which rises into the gears and case. When reaching the gear metal, after penetrating the grease and gum, the solvent vapor changes into a liquid, which carries all foreign matter out through the drain plug. The new device is said to clean gears in 10 minutes.

One-Man Crankshaft Grinder

A one-man portable crankshaft grinder that sells complete for \$35 f.o.b. the factory is offered by Mc & Mc Sales Co., Billings, Mont. Consisting of a set of six stones and six guides, a steel clamp and a handle, the outfit is packed in a convenient metal container. It is said to be capable of refinishing any crankpin worth repairing whether the pin be flat, scored, babbitt-smear or tapered. Crankshaft does not need to be removed from engine and one man can handle the job. No power supply is needed. Standard model takes crankpins from 1 7/8 to 2 1/4 in. Extra equipment increases capacity to 2 5/16 and 2 3/8 in. sizes.

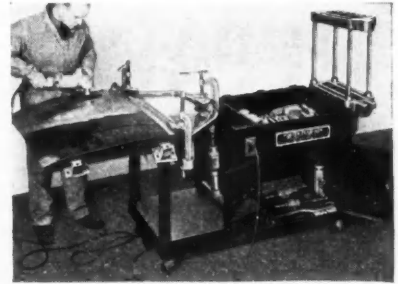
Goodrich Batteries for 1941

Featured addition to the 1941 line of batteries built by the B. F. Goodrich Co., Akron, Ohio, is the new GS-151, a 51-plate unit of glass mat construction which incorporates the patented Goodrich non-flood cell cover. Other additions include the HS-145 standard and the HD-145 heavy-duty.

Truck batteries have also been improved in the new line, with the old types being replaced generally by Glasstex units and having two more plates per cell. Three of the new truck batteries are equipped with the non-flood device.

Body and Door Machine

A new repair unit known as the Porter-Ferguson Body and Door Machine has been announced by H. K. Porter, Inc., Everett, Mass. Featuring a hydraulic rocker spoon for removing dents in difficult as well as in routine jobs, the unit is equipped with a door bar, length adjuster and a tubing extension set. The door bar



works on the machine as a clamp, but may be detached for shaping the door to the contour of the body. The interior of the cabinet is illuminated and a double electric outlet is provided.

Bear Balancing Machine

A heavy-duty wheel balancing machine known as the Bear No. 330 has been announced by the Bear Mfg. Co., Rock Island, Ill. Designed to handle the heaviest truck and bus wheels, the new machine includes a hoist for lifting large wheels and

WISE FLEET SHOPS...

WORK TO THIS NEW BRAKE SERVICING SCHEDULE

**NATIONAL SAFETY COUNCIL'S STANDARD SCHEDULE
FOR SERVICING FLEET BRAKES**

This, the first definite standard of procedure ever created for brake service, should guide the mechanic's workmanship, provide an accepted definition of complete brake service, and protect the fleet owner's investment.

By having competent mechanics follow it in your shop you will protect drivers from brake failure in emergencies, and avoid gradual development of dangerous brake conditions. Regular inspection is a vital part of the schedule.

- 1. Preliminary inspection —**
 - a. Test brakes and look for leaks.
 - b. Check for proper adjustment of brake pedal.
 - c. Check for proper adjustment of brake pedal.
 - d. Check for proper adjustment of brake pedal.
- 2. Inspection, adjustment, and lubrication —**
 - a. Pull off wheels.
 - b. Examine brake shoes for wear.
 - c. Examine brake shoes for wear.
 - d. Examine brake shoes for wear.
- 3. Lubrication —**
 - a. Lubricate brake shoes.
 - b. Lubricate brake shoes.
 - c. Lubricate brake shoes.
 - d. Lubricate brake shoes.
- 4. Check for proper adjustment of brake pedal —**
 - a. Check for proper adjustment of brake pedal.
 - b. Check for proper adjustment of brake pedal.
 - c. Check for proper adjustment of brake pedal.
 - d. Check for proper adjustment of brake pedal.
- 5. Check for proper adjustment of brake pedal —**
 - a. Check for proper adjustment of brake pedal.
 - b. Check for proper adjustment of brake pedal.
 - c. Check for proper adjustment of brake pedal.
 - d. Check for proper adjustment of brake pedal.
- 6. Check for proper adjustment of brake pedal —**
 - a. Check for proper adjustment of brake pedal.
 - b. Check for proper adjustment of brake pedal.
 - c. Check for proper adjustment of brake pedal.
 - d. Check for proper adjustment of brake pedal.
- 7. Check for proper adjustment of brake pedal —**
 - a. Check for proper adjustment of brake pedal.
 - b. Check for proper adjustment of brake pedal.
 - c. Check for proper adjustment of brake pedal.
 - d. Check for proper adjustment of brake pedal.
- 8. Check for proper adjustment of brake pedal —**
 - a. Check for proper adjustment of brake pedal.
 - b. Check for proper adjustment of brake pedal.
 - c. Check for proper adjustment of brake pedal.
 - d. Check for proper adjustment of brake pedal.
- 9. Check for proper adjustment of brake pedal —**
 - a. Check for proper adjustment of brake pedal.
 - b. Check for proper adjustment of brake pedal.
 - c. Check for proper adjustment of brake pedal.
 - d. Check for proper adjustment of brake pedal.
- 10. Check for proper adjustment of brake pedal —**
 - a. Check for proper adjustment of brake pedal.
 - b. Check for proper adjustment of brake pedal.
 - c. Check for proper adjustment of brake pedal.
 - d. Check for proper adjustment of brake pedal.

...AND FOLLOW THIS Grey-Rock PLAN





a special balancing arbor for centering. It is equipped with an electric neon-eye mechanism which indicates the position and amount of both static and dynamic unbalance present in a wheel. Weighing 200 lb., the new unit can handle wheels to a maximum of 48 in. dia., 16 in. width and weighing up to 400 lb.

Williams Wrench Set

Comprising 12 wrenches with 24 different openings, "Superrench" Set No. 1712 is

being offered by J. B. Williams & Co., 225 LaFayette St., New York. The 15 deg. angle of the openings enables hex nuts to be rotated completely where the swing of the wrench is limited to only 30 deg. The set will service all sizes of nuts, including S.A.E. Standard- $\frac{1}{4}$ in. to $1\frac{1}{4}$ in.; U. S. Standard- $\frac{1}{8}$ in. to 1 in.; American Standard- $\frac{1}{4}$ in. to 1 in. and Cap Screws- $\frac{1}{8}$ in. to $1\frac{1}{4}$ in.

Foreman Battery Booster

Featuring automatic cut-out and a time switch, a new streamlined battery booster for charging batteries in the vehicle has been offered by W. D. Foreman, 54th and State Sts., Chicago, Ill. The new unit is of the motor-generator type and is said to



bring a battery up to normal in forty minutes. Finished in white enamel with chromium trim, it occupies only 3 sq. ft.

AC 10-Millimeter Plugs

Just to keep up to date on passenger car spark plug requirements, here's the 10-millimeter size as offered by the AC Spark Plug Division, Flint, Mich. Thirty-five per cent of all new cars sold during the first seven months of 1940 were equipped with this type, and because of their wider and more efficient heat range they will perform better in the engines for which they are designed.



Aeroil Cleaning Equipment

New motor and parts cleaning equipment in the form of a portable, compressed air spray outfit and a series of hot dip degreasing tanks is being offered by the Aeroil Burner Co., Park Ave. at Thirteenth St., West New York, N. J.

Cleansing action is effected with the spray outfit by spraying a mixture of water or kerosene and a chemical cleaner under 85 lb. pressure. The complete unit features a steel welded spray tank, pressure gage, safety valve and brass spray bar. All necessary parts are included for full operation.

Topping the series of degreasing tanks (TURN TO PAGE 117, PLEASE)



Your Grey-Rock distributor

has this big, new 72-page book



for you.

It gives you the new brake servicing schedule,

—It's your mechanic's yardstick.

It has 61 pages of the latest



adjustments, and correct replacement materials

has a complete stock of both Grey-Rock Rivet-On Blocks



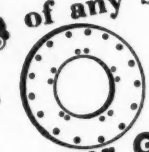
and Grey-Rock Bolt-On Blocks



to balance

brakes on vehicles

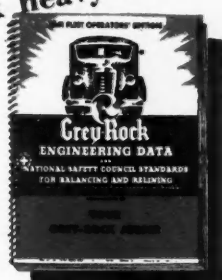
clutch facings of any size. Also use famous Grey-Rock Vee-Lok heavy-duty



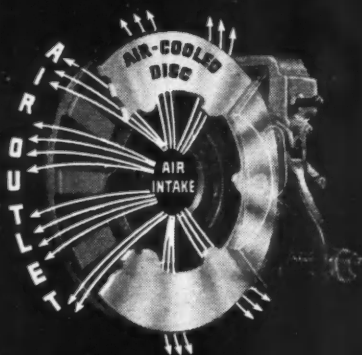
and Balanced fan belts.



Use your Grey-Rock Distributor's Service
Ask him for this big Book



Grey-Rock BALANCED TRUCK BLOCKS
UNITED STATES ASBESTOS DIVISION of Raybestos-Manhattan, Inc., MANHEIM, PA.
BRAKE LININGS • CLUTCH FACINGS • FAN BELTS • AUTOMOTIVE HOSE • RELINING EQUIPMENT



THE TRU-STOP
"VENTILATED" DISC
MAKES TRU-STOP
EMERGENCY BRAKES
SERVE BETTER AND
LAST LONGER

Inflammable!

"DIAMOND T" and Contract Carrier
decide on the additional protection of
TRU-STOP Emergency Brakes

"TRU-STOPS" give you safe control you can get with no other emergency brake.

They operate on the propeller shaft — can not affect one wheel more than another.

They always give positive action because they are disc brakes — nothing to stretch.

They don't get so hot because the rugged drop-forged discs are ventilated — actually dissipate the heat of braking.

That's why TRU-STOP *Emergency* BRAKES give more — and smoother, safer — stops. That's why drivers can use them continually to supplement service brakes. That's why linings last longer and brake service costs are cut to the bone.

It is more than worthwhile to specify TRU-STOP *Emergency* BRAKES on new equipment. Or, write us for complete installation that you can make easily in your local service shop.

TRU-STOP
Emergency
BRAKES

AMERICAN CABLE DIVISION

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AMERICAN CHAIN & CABLE COMPANY, Inc.

Save Pencil Work
Order and Sell
CARTER PARTS
by the Package
Carter Carburetor Corporation
2820-56 North Spring Ave., St. Louis, Mo.



FLY-BALL GOVERNORS

FOR ALL MAKES AND
MODELS OF VEHICLES

The Pierce Governor Company
ANDERSON, INDIANA, U. S. A.

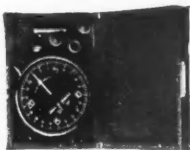
STOP BEARING TROUBLES
with J. P. BEARING HONE



WRITE FOR FULL INFORMATION ON THE NEW J. P. BEARING HONE (PAT. NOS. 2,174,945-2,178,491), THE ONLY HONE OF ITS KIND ON THE MARKET. EASY TO USE—NO MOVING PARTS—COMPACT—ECONOMICAL AND CERTAIN.

J. P. MANUFACTURING CO.
YOUNGSTOWN, OHIO U. S. A.

JONES PORTABLE TACHOMETER



The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co., of La., N. J., N. Y., Shell Petroleum Co., Atlantic Refining Company, Tidewater

Oil Company, Keeshin Motor Express, Mack Trucks, Brockway, U. S. Navy.

Direct, instantaneous reading

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THE Decalcomania that is . . .

FIRST in { **APPEARANCE
ECONOMY
DURABILITY** }
Permalux "KOLORFILM"

PERMALUX "KOLORFILM" decals offer greater durability and economy in application and maintenance. Completely synchronous with modern truck finish, they last longer . . . look better!

IT'S MADE OF DuPONT "DULUX"

Write TODAY for details.

THE PERMALUX COMPANY

900-10 West Lake St., Chicago, Ill.

BRAKE FLUID FACTS

(CONTINUED FROM PAGE 23)

materials resulting in a fluid whose properties are different. It must not react chemically with any other materials with which it might come in contact. If it does change chemically there is no telling what might happen because it might change into a substance that would give any combination of objectionable characteristics.

7. It must not freeze at any temperature which it will encounter. Freezing of brake fluid causes immediate brake failure.

8. It must have a narrow viscosity range. The fluid must have nearly as possible the same resistance to flow at zero degrees that it has at 100 deg. If the range was wide the pedal pressure would vary for the same braking effort which would leave the driver with a constant problem of how hard to depress the pedal. In addition all fluid passages in the brake system are designed for one viscosity and the system works best with fluid at that viscosity.

9. It must absorb moisture. The fluid is bound to come into contact with moisture as a result of condensation, if no other way. It must mix to prevent corrosion and interference with the transmitting of pressure.

10. It must be fully miscible. The fluid must mix homogeneously with other brake fluids. If it does not a very accurate record showing what fluid is already in the system must be available or it will be necessary to drain the system and replace all of the fluid each time the level drops.

Fleet operators undoubtedly would do well to bear these 10 necessary brake fluid qualities constantly in mind.

The second question, "Is there any way that a fleet operator can make a qualitative check of a brake fluid to make certain that it embodies the desirable characteristics, or must he depend upon the reputation of the manufacturer and trust that actual service experience will justify that faith?" developed a majority opinion supporting the latter half of the question.

Most brake fluid manufacturers agree that testing brake fluid is too complicated for the fleet operator (TURN TO NEXT PAGE, PLEASE)

CAN YOU AFFORD TO PASS UP SAVINGS LIKE THESE?



INFRA-RED RAY WILL ENABLE YOU TO

- ✓ Dry 4 coats of surfacer without losing time between coats in 10 to 15 minutes.
- ✓ Dry putty glaze in 15 minutes.
- ✓ In 10 to 15 minutes after applying Infra-Red rays start polishing color coats.
- ✓ Polish synthetic enamel job on a complete fender within 21 minutes after applying.



Nalco Infra-Red Ray drying equipment cuts drying or baking time to a fraction—cuts painting cost and produces a more uniform finish. It eliminates the need for overnight drying on synthetics . . . enables you to deliver a paint job in a matter of hours instead of days.

Write today for literature and full details.

**NORTH AMERICAN
ELECTRIC LAMP CO.**
1056 Tyler Street
St. Louis, Missouri



The most important thing
about oil is . . .

KEEP IT CLEAN
with
PUROLATOR

PUROLATOR PRODUCTS, INC.

Newark, N. J.

Available Trucks

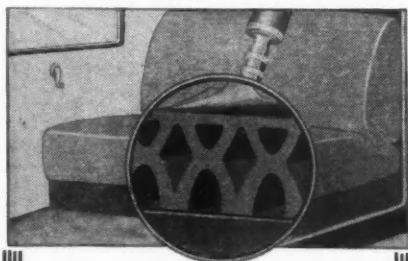
Builders of fine Motor Trucks, Tractors, Trailers and Buses since 1910.

Capacities from 1½ to 10 tons.

Write for bulletin

AVAILABLE TRUCK COMPANY
2501 Elston Ave. Chicago, Illinois

Karpex All-Rubber SEAT CUSHION Cut Costs to the Bone



Truck owners the country over are profiting from the use of Karpex Black Diamond seat cushions and back rests. Their superior heavy-duty diamond grid construction is the result of years of research. This exclusive scientific design combined with specially processed semi-sponge rubber guarantees extra-long life, eliminates upkeep expense and helps prevent driving fatigue. There's sizes to fit every truck. Get complete facts and prices today.

KARPEX MANUFACTURING CO.

1424 E. 19th Street, Indianapolis, Ind.

IMPORTANT NEWS FLASH Drastic Price Reduction On "The GAS MASTER"



Due to improved production methods we are now able to offer the "Gas Master" at F.O.B. **\$4.50** which is a great reduction from the former price of \$7.50. The quality and efficiency of the valve has not been affected and it still carries an unconditional "money-back" guarantee. We ask that you install one "Gas Master" for we know from past experience with other Fleet Owners that one installation will mean equipping your entire fleet.

Phone 3703

HIGHWAY EQUIPMENT, INC.
Oak & Harrison Sts., Michigan City, Ind.

DOUBLE
SAFETY

POSITIVE
TRACTION

DOUBLE
MILEAGE

**McKay Multi-Grip
Double-Bar-Reinforced
Truck Chains**
THE MCKAY COMPANY
PITTSBURGH, PA. • York, Pa.

(CONTINUED FROM PAGE 111)

since there is no simple set of tests by which he can determine the various characteristics. In fact, they think that in addition to a well-equipped laboratory, a well trained chemist would be a necessity in compiling test information.

Without these appurtenances which are seldom standard equipment with any fleet, it is necessary, they say, for the fleetman to depend upon the reputation of the manufacturer and what he says. Some even suggest that fleetmen ask for proof of factual statements as they are made. Along with this suggestion comes the recommendation that the manufacturer be prepared to furnish proof of the facts he advances in sales talks.

There is one manufacturer who does not agree to all of this. This company believes that you can find out something about brake fluid without too much equipment and training. He outlines the following tests:

(A) Evaporation rate. This can be observed by putting equal amounts of the various fluids under consideration in small measures such as one or two ounce graduates or even small glasses marking the level of the fluid accurately with a label or crayon and observing it at intervals. (B) Stability cannot be tested except in actual use. This consists of removing small amounts of fluid from the brake system at monthly intervals, replacing with fresh fluid to maintain the level. Observe color, body and odor. (C) Effect on rubber and metals. Drop a rubber brake cup and small pieces of polished copper, steel and aluminum into a quantity of the fluid and let it stand. Observe effects. (D) Low cold test. Fill a bottle with fluid and place in the coldest compartment of a refrigerator or leave outside a window in winter. Compare the body of the fluids. Fluid may be poured

WOOD
HYDRAULIC

HOISTS & DUMP BODIES
Every Size and Type
for EVERY HAULING JOB

CAR WOOD INDUSTRIES, INC.
DETROIT, MICHIGAN
Branches and Distributors Everywhere

HOLLAND CAN "TAKE IT"

The smartest, most improved unit of its type, Model V-400 Vertical Lift Landing Gear is especially adapted for heavy duty service.

Powerful—rugged—dependable.

Complete truck and trailer equipment.
Catalog on request.

HOLLAND HITCH CO.
HOLLAND, MICHIGAN

Meehanite

Heavy Duty BRAKE DRUMS

Longer life for brake linings... EXTRA strength for sudden stops... Mirror-finished and distortion-proof.

Developed by MEEHANITE RESEARCH INSTITUTE, Pittsburgh, Pa. in cooperation with GENERAL FOUNDRY & MANUFACTURING CO., Flint, Mich.

Write for copy of

"Brake Drum Materials"

**REDUCE
TON-MILE COSTS
ON SEVERE
SCHEDULES WITH
PRECISION-
MANUFACTURED**

**AUTOCAR
TRUCKS**

ARDMORE, PA. AND LEADING CITIES



**HERE'S HOW
TO CUT COSTS
OF BATTERY
OPERATION**

KATHANODE
GUARANTEED LONGER

Spun Glass construction means **DOUBLE LIFE** battery service for all trucks and buses. Kathanode Corp., Chicago.

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COMMERCIAL CAR JOURNAL
JANUARY, 1941

GUNK • The High Performance Motor Block and Chassis Degreaser



• Eliminates fire hazard . . . costs no more to use than oily, ineffective kerosene or similar petroleum solvents • Ask for literature. GURRAN CORP • MFG. Chemists • Malden, Mass.

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Anything in plywoods, flat, fabricated, pre-finished or bent.

Resin-bonded plywoods and combinations with asbestos, masonite, metal and fibre for use in the transportation and industrial fields.

Ask about *Fydr-Tech*, recently given a 1940 award by Modern Plastics.

Ask about *Hollo-Tech*, practically same strength yet half the weight of regular plywood.

For descriptive folder and samples write:

TECHNICAL PLY-WOODS
228 North LaSalle St., Chicago, Illinois
James R. Fitzpatrick, Director
A. N. Carstens, Associate

OXYLATOR

CUTS MAINTENANCE COST

CUTS FUEL COST

"The mechanical solution for crankcase dilution."
For detailed information and particulars, write—

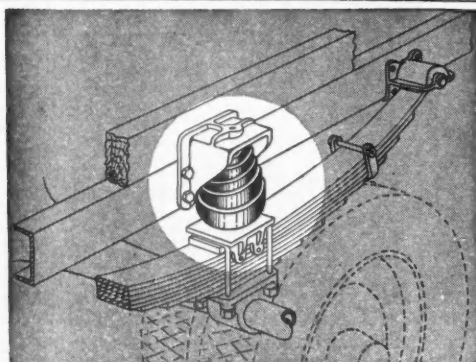
Oxylator Co.
Grand Rapids, Michigan

Specify . . .

XACTO Printing Pump
To Check Fuel Deliveries
at the Pump

AKRAFLO Fuel Consumption
METER to Check
Fuel Consumption at the Motor

S. F. BOWSER & CO., INC.
1360 Creighton Ave.
FORT WAYNE, INDIANA



into a saucer and a match flame passed over the surface. A high vapor pressure will probably flash or burn. (E) Miscibility test. This characteristic may be easily determined by mixing together two fluids in a bottle and shaking thoroughly. After being allowed to stand for a while, there should be no visible separation between the two fluids.

Commenting on these fleet tests one manufacturer who does not believe that they give conclusive results observes that (A) the differential between evaporation rates of two fluids at room temperature may be disproportionate to that at the higher temperatures which the fluids will encounter in service. (B) Since all fluids grow darker in service and the odors of different fluids are dissimilar the service man can learn little by casual observation. (C) Like (A) the effect of fluids on cups and metal will be different at higher temperatures. (D) Some fluids will cloud more quickly than others in a cold test and this might be misconstrued to mean that the fluid is not stable.

The third question, "What are the most common service troubles involving brake fluids in trucks and what advice can you give to fleet operators for curtailing them?"

One manufacturer lists "failure to maintain adequate level of fluid" as the greatest trouble. His list then includes, in order, "Attack on brake parts, accumulation of solids, vapor lock." For curtailing the first trouble he suggests removing part of the fluid each month and examining for color, a green color indicating action on copper.

Another manufacturer lists vapor lock, softening and hardening of rubber-cups as the chief troubles. His suggestion for curtailing these troubles is a service analysis. Still
(TURN TO NEXT PAGE, PLEASE)

Handy SUPER SERVICER

Complete, FAST BATTERY SERVICE

HANDY SUPER SERVICER is a combined Tester, Booster and Quick Charger. Compact. Portable. Tests battery in 1 min; charges FAST and SAFELY without removal; 18-batt. capacity; charging rate, 75 amps.; 115 or 230 volts. (Specify voltage when ordering.)

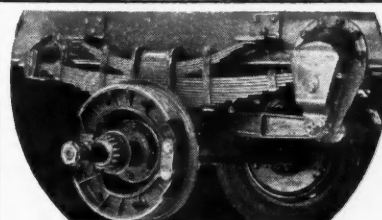


\$180.00

Complete with Bulbs, Leads and Clips.

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BALDOR ELECTRIC COMPANY
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GRAMM TRAILERS

"Ask the man who pulls one"

New Lightweight Design Using Hi-Tensile Steel

GRAMM TRAILER DIVISION, Delphos, O.

THE NUT that is reducing maintenance costs for many of the best managed truck and bus fleets . . .



• Write for Catalog

ELASTIC STOP NUT CORPORATION
2332A VAUXHALL ROAD • UNION, NEW JERSEY

Elastic Stop SELF-LOCKING NUTS

Extra Payload without Penalty!

With its unique cushioning action **BODY BUOY** floats the extra load without additional strain on the center bolts or U bolts of the main spring. There's no burden—

some extra weight—pair of springs weigh less than 20 lbs.—yet capacity is greater than ordinary Helpers. Proven by thousands of vehicle owners. Installed with a few simple tools. Your Dealer has or can quickly secure Body Buoy for virtually any vehicle.

Write for Literature—stating make, year, body and capacity of Job.

BORDICK

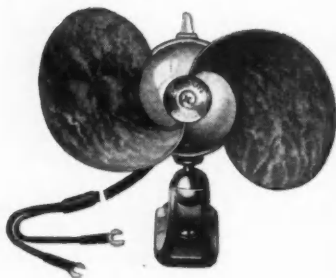
BODY BUOY

The Auxiliary Spring that floats the load

BORDICK STEEL PRODUCTS, INC.

COMMERCIAL DIVISION
537 ORLEANS DETROIT, MICH.

BE PREPARED for Bad Weather . . .



As a Safety Precaution
EQUIP YOUR TRUCKS
with **FULTON**
DEFROSTING FANS &
ELECTRIC DEFROSTERS

Order from your jobber or write us
direct if he cannot supply you.

THE FULTON COMPANY
Dept. CJ-1, Milwaukee, Wis.

For information on
**SHULER
AXLES**
see advertisement in the
February issue

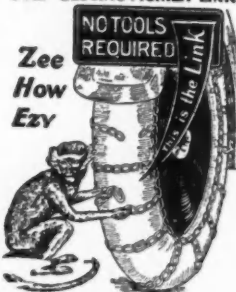
The right braking material
for any commercial vehicle

CUSTOM-BUILT SETS
CBB SETS
THERMO-BLOCKS

Thermoid

THERMOID COMPANY · TRENTON, N. J.

SELF-CLOSING MONKEY LINK



Trade Mark Reg. U. S. Pat. Office
Pat. No. 1,438,560

5 MONKEY LINKS FOR 3 THE PRICE OF

Prices on all sizes of Monkey Links have been reduced 40%. This means you now can get FIVE Monkey Links for the price of THREE—an economy in price to add to the economies of time and effort.

When cross links break, use Monkey Links to make the repairs. They make your chain as good as new. No tools are required. Your drivers do the job right on the road.

FREE Sample to Fleet Owners

Write us for free samples. State number of trucks in your fleet and size of chains. We will send samples immediately.

FLOWER CITY SPECIALTY CO., Rochester, N. Y.
At All Reputable JOBBERS

(CONTINUED FROM PAGE 112)

another manufacturer gives as the most troublesome points, gumming, rubber swelling, lack of miscibility and lack of ability to absorb moisture. His suggestion to fleet operators is a schedule of frequent flushing. He joins all others in suggesting a careful selection of fluid.

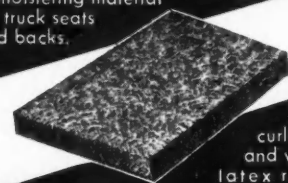
The fourth question, "What specific truck service troubles commonly laid to brake fluid, are to be attributed to the negligence, carelessness or other fault of fleet operators?" brought a response that includes a number of suggestions.

Said one manufacturer: "Service troubles attributed to brake fluid in many cases are caused by tendency of purchasing agents to buy brake fluid as well as other brake service on a price basis. Dirty service stations which naturally influence careless operations in service work are other situations we have bumped up against, and inasmuch as a small particle of dirt or grease in a hydraulic system can cause a complete breakdown of the unit on the road, makes us believe that it is particularly important to have a clean service shop."

Price-buying and cleanliness were stressed also by another manufacturer, who said: "Most fleet operators today realize that price is not the measure of intelligent buying. Some still do, and it is the fact that they want cheap fluid that leads to much trouble. Some operators give the braking system a periodic check-up as they do the rest of the truck. However, a great many do not check the braking system until a complaint is made. Fleets should check and clean out the brake system periodically. Dirt and particles of foreign matter work their way in regardless of all care taken. Because the system is never flushed this accumulation sooner or later interferes with

HAIRFLEX

Upholstering material
for truck seats
and backs.



Springy
curled hairs
and vigorous
latex rubber.

ARMOUR AND COMPANY

CURLED HAIR DIVISION

Chicago

Illinois

DEVILBISS

Spray-Painting Equipment—Spray
Booths—Canopy Exhaust Systems
—Exhaust Fans—Air Compressors
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Oil Guns.

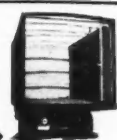
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THE DEVILBISS COMPANY
TOLEDO, OHIO

Distributors or direct sales and service representatives available everywhere.



ATLAS
Collapsible
GATE



(CLOSED - OPEN)

Heavy galvanized wire suspended from rings which slide on a round track. "Chain Link" weave as is used in best quality fence. Protects against theft and loss. Easy to open and close. Weave collapses within itself, saving space. Rigidly made for long, hard service, yet it is so light in total weight that average gate weighs only 90 lbs. Easily installed by owner's men. Satisfaction guaranteed. Quantity Discounts—Distributors Wanted.

ATLAS FENCE COMPANY

Richmond St. & Castor Ave., Philadelphia

**A 5th
WHEEL
FOR
EVERY
PURPOSE**



Territory Available
AMERICAN STEEL FOUNDRIES
EAST CHICAGO, INDIANA

BY MEN WHO KNOW FLARES BEST

**BOLSER
FLARES**

THE NATION'S CHOICE

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SEE YOUR JOBBER TODAY

NEW!

Announcing

VALLEY SUPER-DUTY CHARGER

Eliminate Run Down Batteries for Low Cost Battery Mileage. The new, improved, Valley—Guaranteed (two years) charger connects to the lighting circuit . . . is easy and economical to operate . . . no moving parts. Now it is easy and inexpensive to obtain long battery life by maintaining efficient battery charge.



Model SQ-12 charges 1 to 12 6 volt batteries. NOW ONLY \$28.00

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Why Change Oil!

U. S. Bureau of Standards states: "Oil does NOT wear out mechanically and may be used over and over again." (After reclaiming). Thousands of car, truck and tractor owners have proven the truth of this statement with the use of RECLAIMO. This revolutionary device filters and reclaims crankcase oil as you drive. Saves Time, Trouble and Money! Our 36-page illustrated booklet, "OIL FACTS," contains complete details and startling oil truths that will amaze you. Write for your copy today—it's FREE. (Sold direct and by reliable dealers everywhere.)



RECLAIMO MFG. CO., 2306 N. Western, Dept. 20 CHICAGO



GLOBE-UNION INC., Milwaukee, Wis.

AMERICAN SAFETY TANKS DO PREVENT TRUCK FIRES

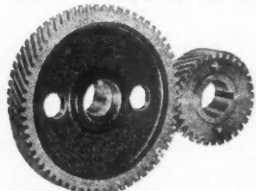
Ask the Men Who Use Them!

American Safety Tank Co.

Underwriters Laboratories, Inc., AU1302
KANSAS CITY, MISSOURI, U.S.A.

CLOYES

The Choice of Fleet Engineers



Recommended and approved by fleet engineers, CLOYES TIMING GEARS offer split-second accuracy and a longer service life.

CLOYES . . . the gears DESIGNED to LAST!
CLOYES GEAR WORKS
17214 Roseland Road, N.E., CLEVELAND, OHIO

brake action and the brake fluid is blamed."

Said another manufacturer: "The average mechanic, partly because he does not see the brake fluid, and partly because he does not understand the chemistry involved, is prone to blame the fluid for any manner of operating trouble. Mechanical difficulties, maladjustments, etc., account for fully as many problems as the fluid can, and sometimes the same symptom may result from one of several sources. Rubber swelling difficulties or sticking may result from flushing with some improper material, contamination of fluid with petroleum products, failure to lubricate new parts as they are installed (reassembling dry). Dirt and resultant contamination are frequent forms of negligence encountered with service men."

Improper servicing and lack of periodic servicing were attributed to fleetmen by another manufacturer. "Failure to properly bleed brakes," he said, "letting the level of the fluid fall too low, and no well-defined or understood plan of regular interval servicing are the main causes of trouble, not due to the brake fluid."

To summarize the information gathered from fluid manufacturers and list it so that fleet operators may use it as a maintenance guide the following program is suggested.

1. Buy fluid only from reputable manufacturers.
2. Ask for specifications which show the characteristics of the fluid.
3. Ask for substantiation of these characteristics.
4. Make sure your preventive maintenance program incorporates periodic inspection and flushing of brakes with proper flushing fluid.
5. Make sure that the brake system is kept clean by doing the work in a clean shop.

One of the most complete lines in the business—each tire built to give you more miles for less money.

THE GENERAL TIRE & RUBBER CO.

AKRON, OHIO

In Canada—The General Tire & Rubber Co. of Canada, Limited, Toronto, Ontario

GENERAL TRUCK TIRES

**Specify
CLAW**



Double-Duty

TRUCK CHAINS

Columbus McKinnon Chain Corp.
TONAWANDA, N. Y.

OSHKOSH

4 Wheel Drive Trucks

A proven product. 1½ to 10 ton capacity. Write for complete information.

OSHKOSH

Motor Trucks, Inc.

Oshkosh, Wis.

TOP QUALITY..

**LOW
PRICE**



Wire Joe

WIRE AND CABLE

Battery Cables, Ignition Cable,
Lighting Wire

The Crescent Company

Pawtucket, Rhode Island

SAVE WEIGHT

with

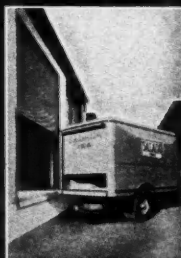
**REPUBLIC
DOUBLE STRENGTH
STEEL**

REPUBLIC STEEL CORPORATION
General Offices - Cleveland, Ohio

KINNEAR TRUCK DOORS

Also Doors for Buildings

ALL METAL
... Coils like a window shade, out of the way
**CONVENIENT
BURGLAR PROOF
FIRE PROOF
MORE DURABLE**



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**The KINNEAR
Manufacturing Co.**
2100-20 FIELDS AVE.
COLUMBUS, OHIO
Factories: San Francisco, Cal., and Columbus, Ohio

THE EDITORS OF COMMERCIAL CAR JOURNAL

are already busily engaged in compiling vital statistics and other invaluable information about the industry for the

FLEET OPERATORS' REFERENCE ANNUAL

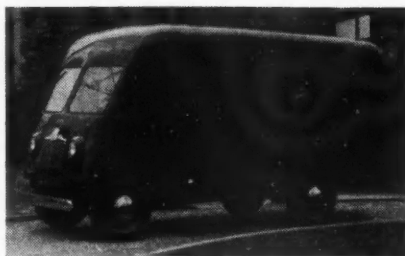
which will be
published
APRIL 1, 1941

Additional copies of this issue are printed each year to meet the extra demand, but this supply is quickly exhausted. If you plan to order additional copies of the 1941 issue, at \$1.00 per copy, you are urged to send your reservation now.

CHILTON COMPANY
Chestnut & 56th Sts.
Phila., Pa.



NEWSCAST (Continued from Page 48)



United Parcel Service, New York, recently added 25 of these 1941 Brooks VanEttes to its metropolitan fleet. Like all models from Transportation Engineers, Inc., the chassis is Ford

N. J. League Proposes New Taxes

New Jersey's State League of Municipalities doesn't fool when it comes to proposing truck taxes. The latest would impose a graduated mileage tax on trucks as follows: Up to 5000 lb., $\frac{3}{4}$ cent; 5000 to 10,000 lb., 1 cent; 10,000 to 15,000 lb., $1\frac{1}{2}$ cents; 15,000 to 20,000 lb., 2 cents, and $\frac{1}{2}$ cent per mile additional for each 5000 lb. An increase of 60 per cent in truck license fees is also advocated.

Maryland Road (and Tax) Plan

Word from Maryland is less specific, but if the State Roads Commission gets its way for a 20-year highway program that would build 3600 miles of roads at a cost of \$216,947,500, new vehicle taxes are in store, particularly for truckers.

Arc Welding Manual

A 96-page arc welding manual containing a practical series of welding lessons extracted from the book, "Arc Welding and How to Use It," has been made available by the Hobart Brothers Co., Box EW-65, Troy, N. Y., at a price of 50 cents.

W. Va. Prohibits Car-Over-Cab

The car-over-cab proponents suffered another defeat early this month when the West Virginia Supreme Court upheld the validity of the State law prohibiting such operations.

TRUCK PRODUCTION (United States and Canada)

	1940	1939	Per Cent Change
January . . .	74,016	64,093	+15.8
February . . .	71,690	63,606	+12.7
March	75,285	77,107	- 2.3
April	76,807	68,066	+13.0
May	74,139	63,793	+16.2
June	67,787	66,964	+ 1.2
July	74,005	62,750	+17.9
August	41,533	40,868	+ 1.5
September . .	56,703	27,560	+106.0
October	86,104	65,079	+32.5
November . . .	93,068	73,407	+27.0
11 Mos.	791,137	673,293	+17.8
December	84,260
Total	757,553

AUTOPULSE ELECTRIC FUEL PUMP

- Uninterrupted Schedules
- Instant Starting
- Greater Economy
- No Vapor Lock
- Added Protection

AUTOPULSE CORP., DETROIT



NEW PRODUCTS DEPT.

A new tire for $\frac{1}{2}$ - and $\frac{3}{4}$ -ton trucks in full 6-ply truck tire construction, but priced lower than passenger car tires of the same size has recently been placed on the market. Called the Heavy Duty Commercial Cavalier, it is now carried by all Goodrich Dealers. For details write The B. F. Goodrich Company, Akron, Ohio.

BAKER TRUCK SNOW PLOWS



21
MODELS
FOR
ANY
TRUCK

Ask For 32 Page Catalog No. 816
THE BAKER MANUFACTURING CO.
571 Stanford Ave. Springfield, Ill.

TRADE MARK
NOC-OUT
HOSE CLAMPS

THE HOSE CLAMP WITH THE THUMB SCREW
Use Noc-Out Hose Clamps . . . the standard of the automotive industry, for quick tightening, perfect all-around seal on your hose connections. They have the extra margin of strength which makes them the leading automotive hose clamp. Type "A" Adjustable—will fit many hose sizes. Type GBB, solid band, heavy duty clamp for Booster Brakes. GHH for all types of heater hose.

WITTEK MFG. CO.
4305 W. 24th PL., CHICAGO, U.S.A.

ICC Accident Analysis

The Interstate Commerce Commission's Bureau of Motor Carriers has released a 127-page analysis of motor carrier accidents reported to the bureau for 1939. The report shows an increase of 39 per cent over the 1938 total or 3379 accidents for 1939. The Commission emphasizes, however, that these totals cannot be compared since, as a result of Commission activities, reporting of accidents was more complete and exposure has been greater. Mileage of Class I carriers alone increased 25.7 per cent during the period.

COMMERCIAL CAR JOURNAL
JANUARY, 1941

MILES of SMILES



WHEN YOU
USE GENUINE
TIMKEN
BEARINGS

THE TIMKEN ROLLER BEARING
COMPANY, CANTON, OHIO

For running-in new and rebuilt
engines use auxiliary lubricants
containing "dag"* Brand
colloidal graphite.

Acheson Colloids Corporation

Port Huron  Michigan

*REG. U. S. PAT. OFF.

FRINK SNO-FLOWS

Both "V" TYPE and
ONE WAY BLADE TYPE
hand or power hydraulic control
FOR ALL MOTOR TRUCKS
FROM 1½ to 10 TONS

Write for catalog 38AC and 38BC with discount to truck dealers.
CARL H. FRINK, Mfr., CLAYTON, 1300 1st., N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-FLOWS OF CAN. Ltd., TORONTO, ONT.

SPEED CONTROL Without Loss of Power

NORMAL MOTOR PERFORMANCE IN ALL
SPEEDS UP TO SET SPEED LIMIT
FULL POWER IN ANY GEAR FOR HILLS—
HEAVY PULLS—QUICK ACCELERATION
NOW AVAILABLE IN TWO PRACTICAL
TYPES TO FIT ALL REQUIREMENTS

Both types electrically operated in conjunction
with ignition system

- 1—SAFETY SPEED MOTOR CONTROL—Limits RPM
of engine without loss of power—Designed for use
on LARGE TRUCKS and STATIONARY ENGINES.
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speed of vehicle without loss of power—Designed
for use on TAXICABS and LIGHT DELIVERY
TRUCKS.

For full particulars write

SAFETY SPEED CONTROL COMPANY
4242 W. Chicago Ave. — CHICAGO, ILL.

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THE ACCEPTED
STANDARD . . .

A complete line
of LANDING
GEARS . . .
HORIZONTAL,
VERTICAL and
FOLDING TYPES.

Write for complete information on "SAFETY
PROPS" and FIFTH WHEELS.

AUSTIN

TRAILER EQUIPMENT COMPANY MUSKOGEE, MICHIGAN

SHOWCASE

(CONTINUED FROM PAGE 97)

is No. 21T "Heat-Master" Motor Block Tank. Using kerosene, petroleum or gas for heating purposes, the unit has a tank capacity of 140 gal. Once heated, the solution is said to lose only 25 per cent of its heat overnight due to insulation of tank shell and bottom. A smaller model, No. 22T, is available for small parts.

Gatke Blue Ribbon Brake Sets

Blue Ribbon Grooved Brake Lining Sets are the latest development of the Gatke Corp., 228 N. LaSalle St., Chicago, Ill. The Dura-Blok brake lining furnished in these sets is installed with the grooves pointing against the direction of the drum rotation. The grooves are said to eliminate extraneous matter, thus affording better



braking; more quickly restore the efficiency of wet brakes; and avoid wear to drum and lining caused by foreign matter. The sets are furnished ready for installation and are available in all sizes up to and including 6 x ¾ in. liners.

Ahlberg Bearing Servicer

A new front wheel bearing service unit is now available from the Ahlberg Bearing Co., 4702 S. Whipple St., Chicago, Ill. The new unit includes bearing washer, air-pressure dryer, bearing packer and knock-out tool, and storage space for replacement bearings. The cabinet is finished in white enamel and is mounted on casters for easy movement.

Clutch Facing and Brake Sets

A new clutch facing, known as "Semi-Metl," has been introduced by the Raybestos Division, Raybestos-Manhattan, Inc., Bridgeport, Conn. Particularly adapted to truck and bus use, the facing contains a quantity of brass chips which help to conduct the heat from the surface of the facing.

The same division also announces an increase in the number of PG truck brake lining sets to include 75 per cent of the commercial market. These tailored sets are drilled and counterbored, ready for quick relining. They are boxed and factory-sealed.

George Mann, Jr., has been named to head the AC Spark Plug Division of General Motors Corp., succeeding L. Clifford Goad, recently advanced to the position of assistant to the vice-president in charge of the corporation's accessory divisions.

KOETHERIZING

The accepted process
for restoring pistons
to original factory fit.

•
Every pulled piston should
be Koetherized.

KOPPERS COMPANY

American Hammered Piston Ring Div.
BALTIMORE, MD.

Dart Trucks

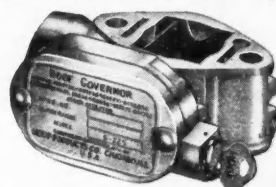
HEAVY DUTY FOR
OFF THE HIGHWAY SERVICE

— Specially Designed for —
Coal Mining—Iron Ore Mining—Copper
Mining—Pit and Quarry—Logging—Oil
Fields—Etc.
It Costs No More for Trucks Specially
Built to Fit Your Needs. Have Our Engi-
neers Visit and Analyze Your Operation.

DART TRUCK COMPANY
KANSAS CITY, MO.

HOOF GOVERNORS

Key — Seal — Dash Control Types



FULL ENGINE POWER and ACCELERATION
COMPACT • NEW FEATURES • TAMPER PROOF

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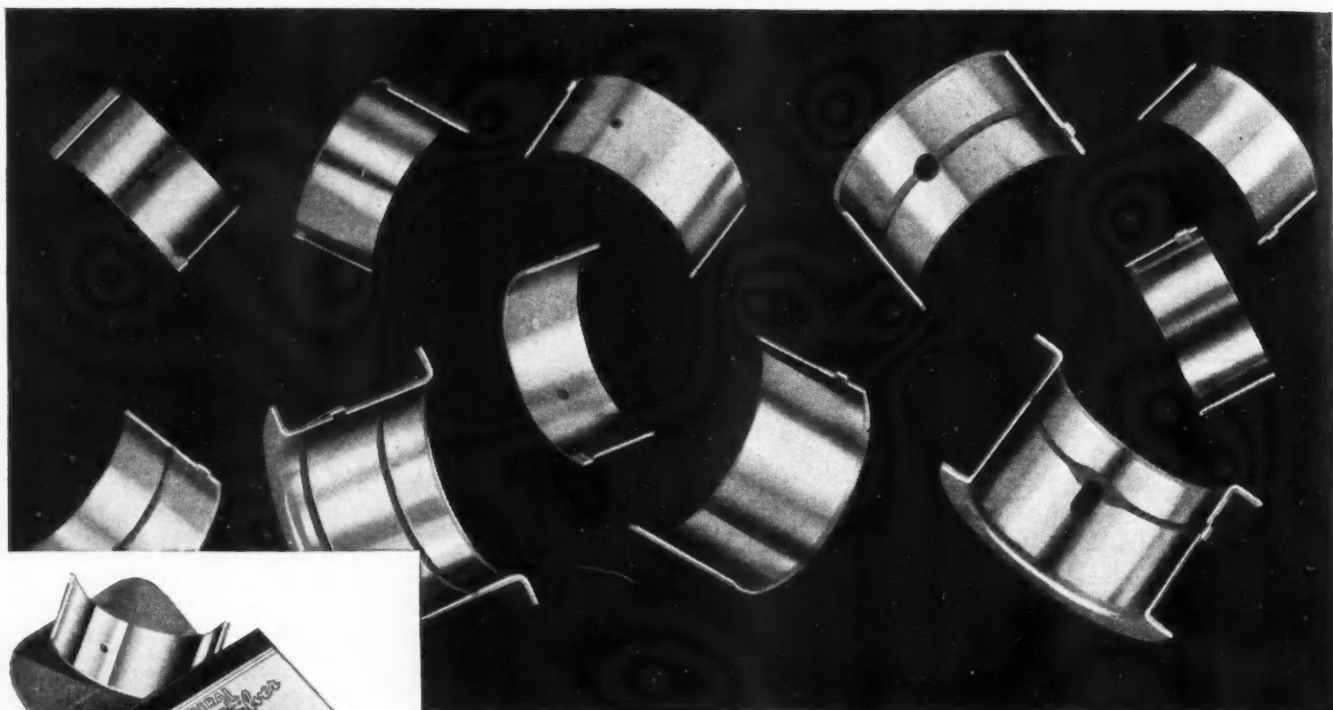
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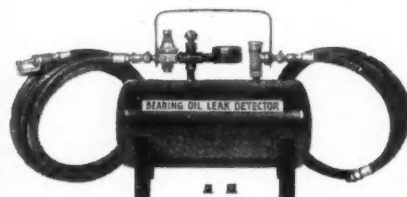
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